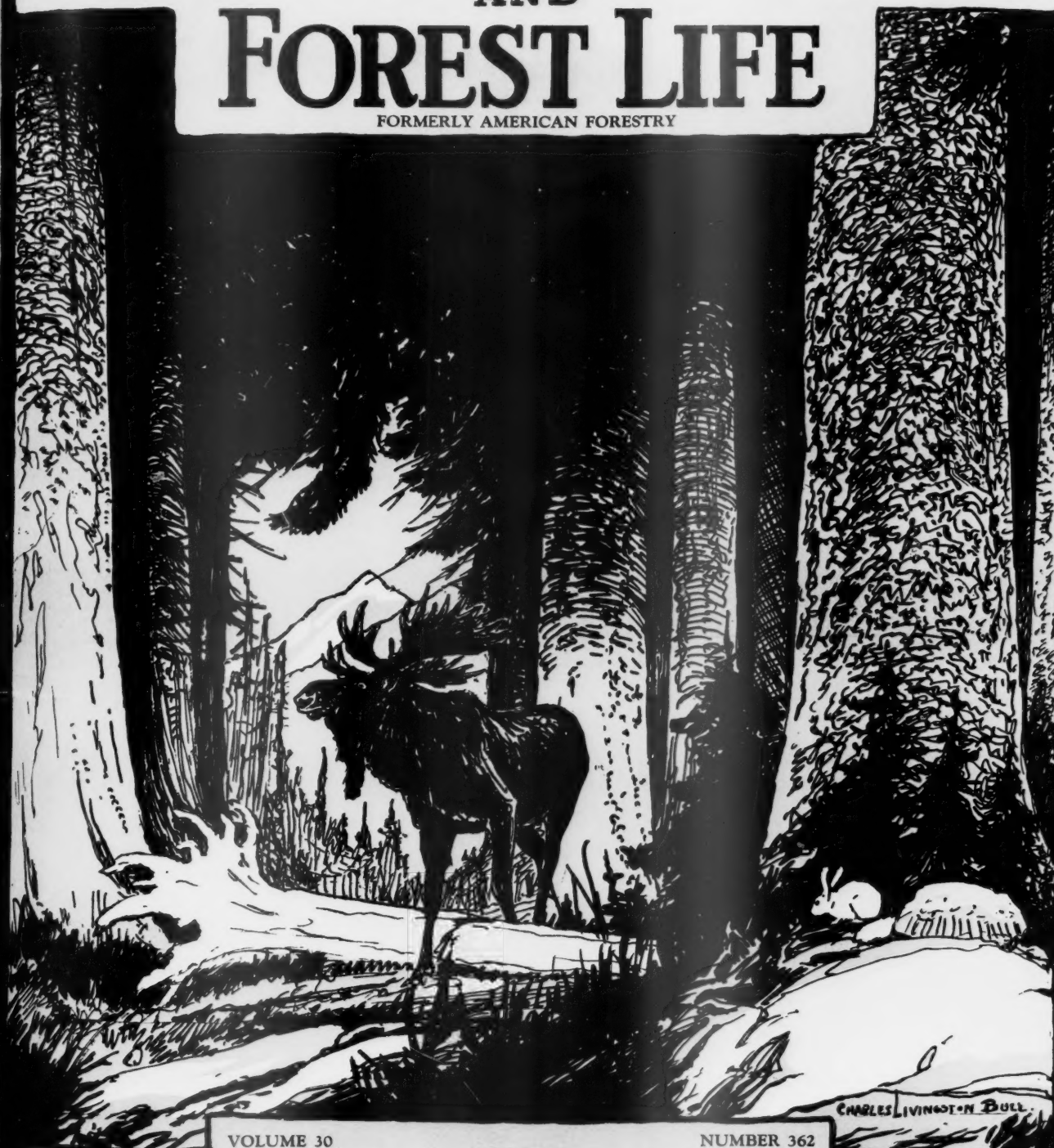


AMERICAN FORESTS AND FOREST LIFE

FORMERLY AMERICAN FORESTRY



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NUMBER 362

ANCIENT DWELLERS OF THE OZARKS

AND OTHER STORIES

FEBRUARY, 1924

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social development of the nation and a God-given birth-right of our children; the PROTECTION OF FISH AND GAME and other forms of wild life, under sound game laws; the ESTABLISHMENT OF FEDERAL AND STATE GAME PRESERVES and public shooting grounds; STATE AND NATIONAL PARKS and monuments where needed, to protect and perpetuate forest areas and objects of outstanding value; the conservation of America's WILD FLORA.

THE EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

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(Formerly American Forestry)

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PRESTO---A National Forest Policy

*A Receipt for Bringing About the Continuous Production
of Timber in the United States*

By HON. JOHN D. CLARKE

Congressman from New York

TAKE ninety-six United States Senators and four hundred thirty-five members of Congress Mix well with pictures of the denuded hills of China and its population with the lowest standards of living. Add a panoramic view of our now fast-disappearing forests, due to the absence of a national forest policy. Place into the mixture the leaven of an aroused public conscience, demanding a national forest policy adequate to the requirements of the United States. Knead into six loaves, embodying the following points, based on reciprocal laws and the co-operation of each of the states with the Federal Government:

1. *More funds for patrol and lookout stations to prevent and put out forest fires.*
2. *Just forest taxation laws to encourage private owners to grow trees.*
3. *Substantial additions to the already existing areas of public-owned forest lands.*
4. *More assistance to the private forest owner, both in aiding reforestation and in the proper management of existing woodland.*
5. *Adequate appropriation for investigation and research work in order to utilize and get the most out of our forests.*
6. *Permission for owners of private forest land who actively co-operate with the Government to deduct a certain percentage from their income tax return, the same principle as is now followed where the individual makes charitable contributions.*

Repeat the same process with the legislatures in each of the forty-eight states. Bake quickly.

Result: Forty-eight states co-operating with the National Government, and the children of all the tomorrows singing the praises of all those who joined in accomplishing this long-desired end.



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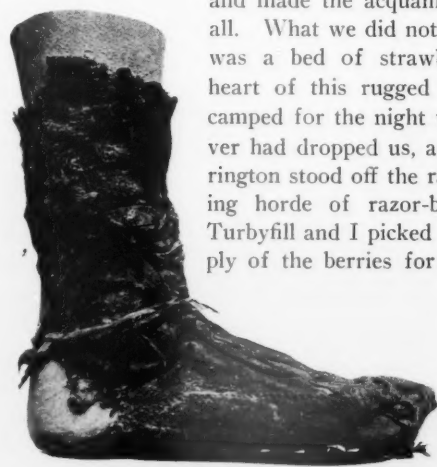
No. 362

Ancient Dwellers of the Ozarks

By DON CADZOW

FOLLOWING a clue 1500 years old, the Harrington Exploration Party to the Ozarks, of which the author was a member, uncovered a great variety of interesting evidence of the existence of a hitherto-unknown people, who years ago lived in bluff caves and trod the surrounding forest-covered hills of Arkansas and Missouri. Their origin and extinction are still a mystery. Mr. Cadzow, the author, is the Arctic representative of the Museum of the American Indian, Heye Foundation. He first became interested in anthropology while trading for fur with the Indians and Eskimos on the Porcupine River of northern Alaska, eighty miles above the Arctic Circle. That these ancient bluff-dwellers subsisted in part at least upon the products of the forest is indicated by a bag of acorns hidden away many centuries ago, and unearthed by the exploration party. Bushels of hazel, chinquapin, and walnut hulls, as well as many other kinds of nuts, still unidentified, were also found in the debris of the bluffs.

HARRINGTON, Turbyfill, and I had expected to find moonshiners, chiggers, and ticks in the Ozark Mountains; so we were not disappointed when we unloaded our outfit from a wheezy flivver at a point on the White River twenty miles from the nearest town, and made the acquaintance of them all. What we did not expect to find was a bed of strawberries in the heart of this rugged country. We camped for the night where the flivver had dropped us, and while Harrington stood off the rapidly increasing horde of razor-back "haws," Turbyfill and I picked an ample supply of the berries for supper. Our



A MOCCASIN, MOUNTED ON A CAST, FOUND IN THE BUSHWACK BLUFF ROCK SHELTER

enjoyment of this luscious fruit might not have been so keen had we known that it was the private patch of a

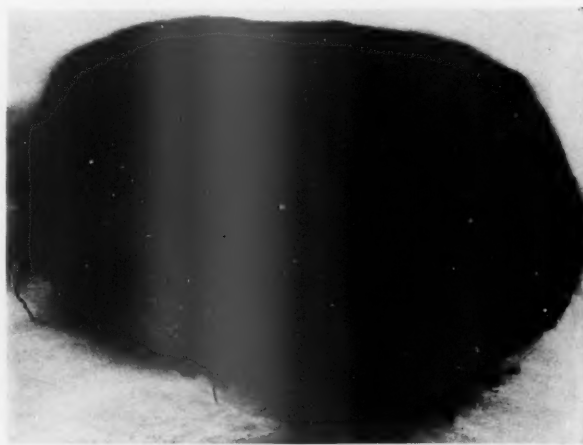
notorious bandit temporarily resting in jail.

We had been sent to the White River to run down a clue. No, we were not Internal "Revenooers," although moonshiners often mistook us for government agents, and sent a few 30-30's hissing in a ring about our canoe, merely as a warning to leave that particular part of the country. These splashed too close for comfort, so Turbyfill, who hailed from the Blue Ridge Mountains of North Carolina and was familiar with the mountaineer's

methods, advised us to negotiate with the senders of the warnings and try to convince them of our harmless intentions.

This was good advice. We proved ourselves to be "O. K." by adding a few influential mountaineers to our party in an advisory capacity, thus gaining the benefit of their knowledge of local conditions.

The clue we had been sent thirteen hundred miles to unravel was probably fifteen centuries old. While a detective might say that a clue fifteen hundred years old cannot be followed, we were quite optimistic about this one. The specimen that had drawn us to this country of moonshiners, chiggers, and razorbacks was a stone ax with the wooden handle attached. The ax was not an ordinary Indian tomahawk, such as is found all over



THIS BAG, WOVEN OF TWISTED WILD HEMP, FILLED WITH ACORNS, WAS FOUND TWO FEET UNDER THE SURFACE OF THE GROUND



THE EXTERIOR OF BITTNER ROCK SHELTER, IN ARKANSAS—THE ENTRANCE TO ONE OF THE HOMES OF A PRIMITIVE PEOPLE, WHOSE EXISTENCE HAD BEEN HERETOFORE UNDREAMED OF

North America, but the ax of a hitherto-unknown people—made, perhaps, fifteen hundred years ago, or a thousand years before Columbus discovered America.

When Harrington first heard about this complete specimen he made the trip to the Ozark Country to verify the report of the discovery. If this ax were the real thing, it might be possible to make still more amazing discoveries by excavating the abodes of the unknown "Bluff-Dwellers," for no perishable part of a pre-historic Indian relic of this kind had ever been found complete in the Southern States. The perishable objects of even the historic Indians of this region, such as clothing, baskets, and articles of wood, had long ago become disintegrated.

When Harrington returned to New York actually bringing the ax with him, we began planning an expedition to the Ozarks that would enlighten us further as to who these strange "new" ancient Indians were. The people who made the ax, Harrington deduced, were neither cave-dwellers nor cliff-dwellers, as we know of them, but were a wholly unrelated people, who had lived under the huge overhanging limestone bluffs of the White River, in northwestern

Arkansas and southwestern Missouri.

Whence these primitive people came was an anthropological mystery. The approximate date and manner of their disappearance were equally mysterious. Nothing is yet known of them except what has been learned from a study of their implements, clothing, and partially mummified bodies—all in a wonderful state of preservation—for, unlike the Egyptians, they left no written records.

When it was definitely decided that we should investigate this ancient mystery, we sent our canoe and outfit by express to Eureka Springs, a summer resort, and hauled it out to the site of the first rock shelter, a roomy cave under a bluff on the White River. A storm threatened, so we hastened to pitch our tent. Harrington, however, was kept

busy throwing rocks and clubs at the hordes of razorbacks that surrounded us even before the outfit was unloaded. These pigs looked like wild boars and were evidently in search of a change in their steady diet of acorns.

The "haws" continued to surround us all night, their long tusks capable of ripping up anything from a tent to a can of "gold fish." We took turns standing guard



INTERIOR OF THE BITTNER ROCK SHELTER, WHERE THIS ANCIENT PEOPLE OF MYSTERIOUS ORIGIN LIVED—IN THE SHELTER OF THE BLUFFS; AND JUST AS MYSTERIOUS IS THE MANNER AND TIME OF THEIR GOING



SQUASH AND PUMPKIN SEEDS, ACORNS, INDIAN CORN, AND BEANS, PERHAPS FIFTEEN HUNDRED YEARS OLD, WERE FOUND IN WOVEN GRASS BAGS

until daylight, and then began the task of striking our temporary camp and moving down to the ledge under the bluff. The Tarheel and I did most of the moving, while Harrington stood off the enemy. First, we carried everything to the top of the bluff, where we piled the entire outfit. The Tarheel, I noticed, carried his dunnage sack with extreme care and set it apart from the rest of the stuff.

When the camp equipment and dunnage were all on the ledge, the Tarheel began lowering it over the edge with ropes to the ground, forty feet below. Here a neighbor put in his appearance. He was square-set and his voice was gruff and suspicious, as he came walking toward me minus the usual squirrel rifle.

"Whatchu'all doin' here, stranger?"

"We're going to dig for Indian relics," I replied.

"There ain't no Indian relics here."

"I mean Indian things buried under the cliff," I explained.

But the mountaineer was skeptical and asked numerous other questions. The Tarheel, hearing voices, came

down; and it was just as well that he did, for the native was frankly suspicious.

Sizing the situation up calmly, the Blue Ridge diplomat opened his dunnage bag and carefully drew out a voluminous bathrobe, partly Egyptian and partly futuristic in design, laid it tenderly on the ground, and extracted from



IN ADDITION TO THE BASKETS AND OBJECTS MADE OF GRASS, SMALL TRINKET BASKETS OF SPLIT CANE WERE FOUND

its innermost folds a fruit jar full of North Carolina mountain dew!

"Better hev somethin' to warm yuh up," suggested the Tarheel.

"Don't keer if I do," replied the mountaineer, with a wide grin.

As the native wiped his mouth with the back of a gnarled hand, the bushes surrounding us on all sides became alive with men, who advanced with smiles on their faces—and rifles in their hands. The Tarheel's North Carolina hospitality had been equal to the occasion and we made friends with the leading lights of that section. It took us three weeks to excavate the first rock shelter, always under the watchful eyes of a mountaineer;



THE STONE AX WITH A WOODEN HANDLE ATTACHED—THE CLUE, PROBABLY FIFTEEN CENTURIES OLD, WHICH LED TO THE DISCOVERY OF THE ROCK SHELTERS AND THE PEOPLE WHO DWELT IN THEM, PROBABLY A THOUSAND YEARS BEFORE COLUMBUS DISCOVERED AMERICA. IT WAS PERFECTLY PRESERVED IN THE DRY DUST OF THE ROCK SHELTERS

and, while we were digging this shelter merely to test out the country, it yielded enough material, in the form of fragments of baskets, bags, and other perishable objects, and a skeleton, to encourage us to move farther up the river.

We established to our satisfaction that bluff-dwellers once had inhabited that section; the next task was to find a real rock shelter, rather than a one or two family affair. Bill Knox, our square-set mountaineer friend who first approached us on the ledge, was called upon to solve this problem. He had hunted foxes all over that part of the country and knew virtually every foot of it.

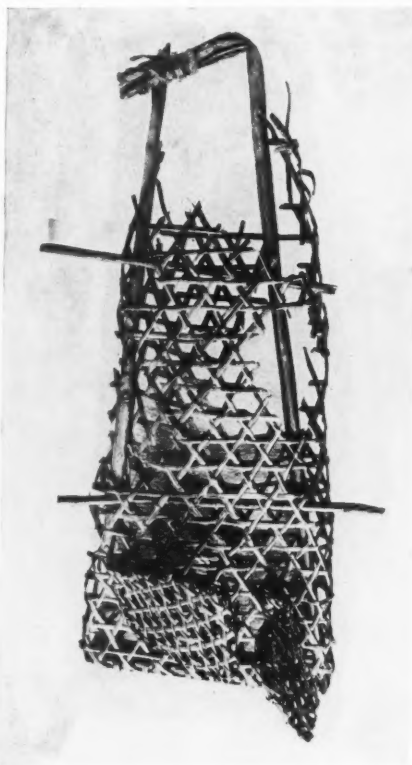
"Yuh fellers oughta move to Salts Bluff," Bill maintained. "It's five miles long, with ceilings thirty to fifty feet high, shelters twenty to fifty feet deep, an' lots o' caves."

So to Salts Bluff we moved. But we made a mistake by not persuading Bill to go along with us in an advisory capacity. Salts Bluff was out of Bill's bailiwick, but he was known throughout the countryside. We, on the other hand, were total strangers, and we were not left long in doubt about it.

The Tarheel and I were paddling up the river one day, soon after our arrival at Salts Bluff, when three "plunks" in rapid succession—in the exact spot where the canoe had been a second before—made us realize that our presence in that section of the country was not desired. Surely here was a difficulty which only our friend Bill could iron out; so we hurried back and induced Bill to come and stay with us; and when he told the natives of Salts Bluff that we were all right, his word was accepted.

The shots from ambush had upset our plans; but, now that peace was restored, we set to work excavating the likely spots along the five miles of rock shelters.

Salts Bluff must have been the community center of the bluff-dwellers. A thousand families could have lived in this stupendous cliff, and it may be that they did dur-



AN UNUSUAL RELIC WAS THIS BABY-BOARD, MADE OF WILD CANE, WITH THE PARTIALLY MUMMIFIED BODY OF A CHILD STILL UPON IT

ing the summer months. It was admirably situated for strategic purposes, commanding a clear view of the river in both directions and being immune from attack from above and below. Apparently, there had been a severe earthquake in the White River valley before the advent of the "Rock Shelter" people, for enormous masses of limestone weighing tons had been dislodged from the under sides of the overhanging bluffs, and the indications were that these masses all fell during the same period. They formed a natural breastwork, and the level space between this rampart and the back wall of the bluff, with the wall reflecting the light and heat of the camp fire, made quite comfortable living quarters for the ancient Indians.

In the four months that followed—at Salts Bluff, Indian Bluff, Webb Bluff, and Bushwack Bluff—life was just one amazing discovery after another. The first find was that of a male skeleton with the head crushed, as if by a stone war-club. Then we found, in the dry soil of the shelters, partially mum-

mified bodies wrapped in closely woven robes of wild hemp or fluffy feathers, all perfectly preserved, in graves lined with six-inch layers of wild grass.

One of the most interesting objects discovered at Salts Bluff was a primitive mussel-shell hoe with the wooden handle still attached. It had been buried with its owner,

perhaps fifteen centuries ago, that he might have something with which to hoe his corn in the spirit land.

In Bushwack Bluff, two feet below the surface, in a dry, grass-lined storage pit, we unearthed a bag of woven, twisted, wild hemp containing a cache of acorns, which were



A PRIMITIVE MUSSEL-SHELL HOE, WITH THE ORIGINAL WOODEN HANDLE STILL ATTACHED. IT WAS FOUND BURIED WITH THE OWNER, PERHAPS THAT HE MIGHT HAVE SOMETHING WITH WHICH TO HOE HIS CORN IN THE SPIRIT LAND

used for food. These acorns could have been enormous trees that had grown and rotted since the little grass bag had been hidden under the bluff by the Indians. It was probably placed there in a period of plenty against the time when famine would stalk the land. I imagine

they ground them into a mush, as the California Indians do today, and probably had a way of eliminating the bitter taste of the nut.

On ordinary archeological sites the perishable parts of relics are usually disintegrated by the elements, but under these bluffs we found such perishable objects as sandals of woven wild grass as durable and well preserved as the day they were made, and a "spear-thrower" of the sort used by the ancient Mayas of Yucatan, the Aztecs of Mexico, and the Cliff-Dwellers of Arizona. Nothing like these "Rock Shelter" relics has ever before been found so far east in the United States. Their value is incalculable to science.

Among the many treasured articles which we brought back to the Museum of the American Indian, Heye Foundation, New York, are moccasins and leggings of buckskin, fish-nets of different-sized mesh, a baby-board made of wild cane, which we found with the partially mummified body of the child still upon it. There were also baskets and objects made of grass, some not unlike the patterns found in the Southwest today.

Acorns, squash and pumpkin seeds, Indian corn and beans, perhaps fifteen hundred years old, are in the extensive collection, which will soon be exhibited at the Museum.

Whence the prehistoric people who left these interesting things behind came from is an anthropological mystery. Whither they went and the manner of their extinction may never be known. Their baskets are the only clue which we have regarding their probable origin.

At the end of our summer's work a careful checking up indicated the existence, perhaps hundreds of years apart, of three separate and distinct groups of peoples living on the banks of the White River. Crude chipped paleolithic implements found in the creek beds are evidence of a culture hundreds of years older than the "Rock Shelter" people. A later people made pottery and lived in the valleys rather than under the bluffs, while the paleolithic creek people and the bluff-dwellers had no pottery.

Did the "Rock Shelter" people exterminate the "Creek" people, and were they in turn exterminated by the "Pottery" people? A further study of the scores of speci-



A VIEW IN THE SOUTH END OF THE WEBB BLUFF ROCK SHELTER, WHERE OUR INVESTIGATIONS LED TO ONE AMAZING DISCOVERY AFTER ANOTHER REGARDING THE LIVES AND ACTIVITIES OF AN EXTINCT, ANCIENT PEOPLE

mens and more research work in the Ozarks may throw light on this interesting question.

Pennsylvania Claims Fourth National Conference on State Parks

THE Fourth National Conference on State Parks will be held at Gettysburg, Pennsylvania, on May 26th, 27th, and 28th. The objects of the Conference are to urge upon our governments, local, county, state, and national, the acquisition of land and water areas suitable for recreation and preservation of wild life, as a form of the conservation of our natural resources.

to the end that eventually there shall be public parks, forests, and preserves within easy access of all the people of the nation.

Information regarding the forthcoming convention may be obtained by writing the chairman, Judge John Barton Payne, 4141 Interior Department Building, Washington, D. C.

Planting Trees in Louisiana

ACCORDING to the *American Lumberman*, the law in Louisiana relating to the taxation of cut over forest lands is considered satisfactory by the large lumbering outfits, as shown by the placing of 56,000 acres under contract for reforestation. Another placed 30,000 acres and another 55,000 acres under contract. The Long

Bell Lumber Company announces that it will make a survey of its holdings, consisting of seven hundred and fifty thousand acres, to determine what portions are satisfactory for timber-growing. Only a portion of the Long Bell holdings are in Louisiana. The South, as a whole, seems to be making good progress in forestry matters.

Keeping Up Our Spirits—of Turpentine

By E. R. McKee

For thirteen years the Forest Service has sought, by study and experiment in the Florida National Forest, to devise improved methods of producing turpentine from our southern pines, and has applied the results in the extensive turpentine operations carried on within the National Forest. During this time the author of this article has been the man on the ground, handling the studies and experiments, directing the application of new methods as developed, and watching and recording the results. He writes as a practical turpentine operator, thoroughly versed in every phase of a most interesting and important industry.

—EDITOR

IN COLONIAL days, when the wooden shipbuilding industry of New England was of great importance, naval stores for domestic and export consumption were secured from the pitch pine from Maine to New Jersey. The present-day naval-stores industry dates back also to early colonial times, but uses the long-leaf and slash pines of the South.

Since 1820, and in fact since statistics of any value are available, American production of naval stores has led the world. Today it is approximately 80 per cent of the total world production. From state to state the industry has migrated, following the retreating forests—down through the Carolinas to Georgia and now to Florida, the present main source of our rosin and turpentine. For years production has steadily declined as the pine forests have been converted into lumber or burned, and prices of turpentine and rosin have mounted just as steadily. Today the South is suddenly faced with the question, "Shall our naval-stores industry continue in its self-destructive process, or by accepting intelligent forest management can it attain permanence and stability?" That the question is a big one is indicated by the fact that since the Civil War the naval-stores industry has held a place in the South inferior only to agriculture and lumbering.

Present-day production of turpentine in our Southland is almost wholly from virgin pine forests in process of rapid depletion. Obviously, the first great step toward stemming the tide of self-destruction must be the adoption of methods in turpentine which will insure the maximum yield of crude gum from every tree. This has been attained in a practical way and to a noteworthy extent in the turpentine leases within the Florida National Forest.

In these operations the trees have been made to yield a sustained production for a period of 12 years, and it is expected that a total working period of at least 14 years will be secured. Under old methods in the industry the average operator in timber similar to that in the Florida

National Forest has generally exhausted the producing power of his timber and killed a considerable proportion of it in four or five years. In direct comparison with many private operations, leases in the National Forest have been known to produce about double the yield of the outside operation from the first cupping on the "front faces." In addition, the National Forest method gives a yield from a second or back cupping nearly equal to that from the first cupping of the ordinary operator. This result is obtained simply by wounding or chipping the tree in such a way as to maintain its vitality and producing power.

A low death rate is another reward of better methods in chipping the trees. On National Forest leases 10 to 14 per cent of all trees worked over an eight-year period and about 14 to 20 per cent of those worked during a fourteen-year operation have died. In this class of timber some of the overmature trees would have died each year regardless of the turpentine and another goodly share of the annual loss on these leases has been due to lightning.

By way of direct comparison: In the spring of 1912 60 acres of National Forest timber adjoining a homestead was leased to the homesteader to help him out in making a profitable working crop. Fourteen hundred and four cups were placed on trees within this sixty acres and these trees were worked in strict accord with the National Forest regulations. At the end of the three-year period there were only four dead trees, bearing a total of six cups. One of these was killed by lightning.

The faces then lay idle for three years, but were started again in 1918, and worked through 1922. The cups were dipped six times during the 1922 season, the eighth year's work on these front faces. The cups were last counted at the beginning of the 1922 season, showing a loss of fifty-four faces, or less than 4 per cent during the entire seven years.

The homesteader, whose timber was as good as or



SNAPSHOTS OF TURPENTINING SCENES ON THE FLORIDA FOREST

(1) Shows a cupping operation, and the good practice of putting on a first streak before the cup is hung. (2) Placing the sawtooth gutter on the tree. (3) Making the incision before placing the sawtooth gutter. (4) Emptying barrels of gum into the still. (5) The rosin barrels are made at the still and in most cases practically by hand. (6) Turpentine—the spirit fruit of the still. (7) Removing scrape—due to evaporation—from an open face. This is the last of the season's operations in the woods. (8) A two-cup tree, showing bar left between faces. There are 16 streaks, 8 inches high, with the cups placed close to the ground. (9) This shows the French method, worked for six years. The narrow face is 108 inches high, and is now closing over at the bottom.

better than the adjoining National Forest stand, had cupped his trees in the spring of 1911. He placed his cups and worked the timber according to his own ideas, which were the prevailing ideas with commercial turpentine operators at that time. Trees as low as five inches in diameter were cupped, and as many cups were placed on each tree as space would allow. Aprons were placed far enough from the ground so that there would not be any undue bending of the back in the operation, and the first streak was chipped six inches above the apron which eased up on one's back a little more. Thus chipping surface equivalent to one year's chipping on the National Forest timber was wasted. The streaks were chipped one inch deep and one inch high. At the end of four and one-half years the operation was abandoned on account of the high death rate and inability to longer work the trees at a profit. Fully 50 per cent of the trees were killed; the remainder was logged and the area left treeless and desolate—a monument to destructive methods of turpentine.

The adjoining tract of National Forest timber stands out in sharp contrast with its healthy growth of trees which, after eight years of turpentine, can now be back cupped profitably and worked for several years more, then logged conservatively and a vigorous young stand left as the nucleus of a new and denser forest.

The difference in these two examples is simply the difference between an industry marching steadily to self-destruction and that same industry stabilized and permanently producing profit to the operators and at the same time perpetuating the natural resources on which it subsists. The methods found satisfactory in the virgin forest can with equal success be applied in the second growth.

Among the 148 National Forests, embracing over 155,000,000 acres and extending into 36 states, the Florida forest is the only one in which production of turpentine and rosin is now conducted on a commercial scale. In this forest, as in the Landes region in France, these by-products are more valuable than the timber itself.

As one proof of the practicality of the National Forest regulations governing turpentine operations it is but necessary to cite the constantly growing demand at rising prices for National Forest turpentine leases. The lease price per crop of 10,000 faces in 1910, soon after the National Forest was placed under administration, was \$50. The most recent leases have brought \$275 per crop per annum.

It is estimated that one tree 10 inches in diameter breast high is worth about 68 cents for turpentine over a fourteen-year period. A 16-inch tree would similarly be worth about \$1.14 and at the end of the fourteen years the saw-timber value of the tree would be greater than at the beginning of the period.

Under existing National Forest regulations no tree below 10 inches in diameter, at a point $4\frac{1}{2}$ feet from the ground, is cupped. On trees from 10 to 16 inches in diameter not more than one cup is placed; from 16 to 23

inches, inclusive, not more than two cups, and not more than three cups are placed on any tree.

Cups are placed as near the ground as the conformation of the tree will permit, and to this end a horizontal cup and apron are used. On two-cup trees a bark bar approximately 8 inches wide is left between faces at the point where cups are placed and this bar is not allowed to become less than 4 inches wide at any point, as the face advances up the tree through repeated chipping. Where chipping is well done the first streak averages between 8 and 9 inches above the ground. In many cases on private operations this first streak has been 24 inches above the ground and a full year of conservative chipping surface wasted. Such waste, of course, is complete and can not be recovered. The financial loss from such chipping is enormous, a fact becoming more and more appreciated by the more progressive private operators who wish profitably to operate their timber over extended periods.

The first streak is chipped as soon as the apron is installed and is placed not more than 3 inches above the apron. A period of about four weeks then elapses before regular weekly chipping begins. The advance streak stimulates the rosin-producing ducts to greater activity before the drain of regular chipping begins, thus producing a larger yield and earlier flow of gum. Streaks must not exceed one-half inch in depth or take more than one-half inch of new wood from the upper side of the face each week. The total height of the face chipped must not exceed 16 inches a season, usually about thirty-two weeks. The regulations also provide a conservative and much less destructive method than was formerly used in raising cups and aprons as the face extends up the tree trunk.

Among operators in private timber, firm in the long-established belief that deep and high chipping meant maximum yields, there was naturally much skepticism in earlier years as to the wisdom of the National Forest methods. After about four years of their practical application, however, and particularly in the cases cited where old and new methods and their results were demonstrated side by side, there developed a steadily growing acceptance of the improved methods throughout the industry.

It is believed that within a comparatively few years there will be two different methods of turpentine practiced in this country; one method on the fast-disappearing stand of virgin timber, and the other on the young second-growth timber that is sure to come under proper forest management.

The Forest Service conducted an experiment of the French method of turpentine, covering a period of six years, and it seems to the writer to be the most logical method developed for application to the second-growth forest. With this method a tree can be cupped when it is 6 inches in diameter and worked over a period of 30 or 40 years, or until such time as it becomes ready for saw timber.

White Shadows

*The Easy Prey of Bird, Beast, and Man, the Wild Hare,
Unequipped to Defend Itself, Survives by Eternal
Vigilance and Nimbleness of Foot*

By EDWIN C. HOBSON

OF ALL the wild life haunting the landscapes of field and forest, I know of no animal more ill-fitted for errant prowling amid the frozen beauties of wintry nights, shot with moonlight, than the wild hare, commonly known as white hare or snowshoe rabbit. And yet he survives. How? It is one of Nature's little unexplained mysteries.

The hare cannot be called a curious creature, even with all its frailties. It is a pretty animal, in its brown summer coat or in the raiment of the protective white of winter. An oddity of the hare is the apparent smallness

of its cerebral development, and its meagerness of intelligence. Through all the ages of intimacy with man and wild kin it apparently has not added a brain cell to its meager supply. The hare of today is the hare of yesterday, of hundreds of thousands of years ago.

Another oddity is its utter lack of defensive attributes. The hare is de-armed; it is without paws and teeth fit to defend itself from the attack of the smallest of animals. It lives by playing the poltroon; it relies upon flight for survival. And, being so illy blooded for the struggle of the wild, it serves one purpose—it is prey for the birds



ILL-FITTED FOR THE STRUGGLE OF THE WILD, THE HARE MUST DEPEND UPON FLIGHT FOR SURVIVAL;
AND THIS FAILING, IT RESIGNS ITSELF, WITH NO DEFENSE, TO THE INEVITABLE, AND FALLS, THE VICTIM
OF THE POWERFUL BIRD OF PREY

of the air, for the animals which prowl with soft paws, or for man athirst to kill with club or gun. The faint squeal of the caught hare is feeble protest. When it feels the sudden clutch of claw or talon, the hot wound of teeth or beak, there is no turning to meet the assailant—not even the bravery of the turning worm; it is resigned to the inevitable.

Harsh praise, you say, for a defenseless, harmless creature. True. And yet it is these colorless qualities that endear the hare to man, the nature-lover. Obliterating the wild rabbit from the long-grass thickets, the birch scrub, and the fence lines of the forest is like stripping a favorite woodlot of its few remaining virgin trees; for the hare, like the trout and ruffed grouse and white-tailed deer, the fox and muskrat, the blue jay and crow, is part of the woodlands. He gives it the swift, silent touch of the wilderness. A corner of the landscape without wild life is a desert. Give it trees and birds with



Courtesy U. S. Forest Service

A RELATIVE OF THE SNOWSHOE HARE, THE ARIZONA JACK RABBIT, DEMONSTRATING ITS ABILITY TO BLEND ITSELF INTO A LANDSCAPE AS UNPROTECTING AS AN ARIZONA DESERT

song, flowers abloom, wind that tussles a butterfly, and wild animals with furtive ways, like the hare and the squirrel, and it becomes a world that pleases that age-old strain of outdoor-loving man.

I have deep regard for the white hare, cooked Southern style, like fried chicken, but I confess to a deeper appreciation for the animal when it roams the dry wet-lands and willow thickets. Scarcity has compelled a change from epicurean pleasures to an æsthetic and biological appreciation. A live hare streaking through the brown thickets of snowy solitudes is more valuable to trampers of outdoors than one hanging stiff and frozen in the window of a butcher shop.

It is in winter that one gets in closer confidence with the white hare than at any other time of the year. Snow seems to be the magic carpet to many of Nature's treasured secrets. A nodding acquaintance of summer becomes the intimacy of winter. The hare's night-long

wanderings over the moonlit snows are published far and wide by the morning sun—a record coded with furtive movements, silent pauses, danger signals, and tragical scenes. Terror stalking the frozen land is written there in invisible words. But the greater terror is not the singing cold or the dark shapes of something hiding in the long shadows. It is the deep snows of midwinter which, beautiful in their chaste witchery and wind-blown forms, are to the hare a death trap. Snows bury the food supplies and hinder travel and foraging. They lead the two-footed trailers to his hiding place and make swift death his constant companion. Tomorrow to the hare means flight—speed in a sudden get-away. And by speed plus eternal vigilance he survives.

In the snow I read the history of the long, adventurous hours of his night. It was a line of tracks leading over a stone wall that took me from the road one morning to search the river bottoms. The morning was young and the air was clean and clear. Drenched with sun and wind and shifting shadows, the land had an alpine splendor. The trail led streamward and ended at the water's edge! Some time in the night the hare crossed on skim ice, for the telltale footprints marked the opposite shore. I turned to circle a brush heap when there came a soft gasp, a flurry of fine snow, and a white hare went flying in great bounds down the open, shrub-littered levels. Like a white shadow, it skimmed the snow. As an example of protective coloring, it was almost perfection.

A scattering of trees, mostly birch and soft maple, with isolated clumps of willows and dogwoods, grew along the river shore, and in some locations, where the ground sloped sharply to the water, were blackberry tangles and much small growth. Here were tracks of white-footed mice, cottontails, weasels, and a lone muskrat, while trails of ruffed grouse and pheasant revealed the visits of these game birds. Even if snows were deep, wild life seemed abundant.

Under a pyramidal cedar standing amid a berry entanglement I found the wide, oval pad-prints of a hare which had been feeding on the slender twigs and tender buds. It had come to the vines in ordinary hare-fashion, slowly, curiously, with frequent pauses to survey the moonlit clearing and to listen for danger signals. The trail was easy to read. The snow about the cedar told of many shifting movements; consequently it fed well. Finally something interrupted the feast. It bounded from the vines in an eight-foot leap and left in such a hurry that a little patch of white fur remained on a thorny stem. The second leap must have been a good ten feet, and the third as much; thence the trail of the fleeing hare denoted speed that annihilated distance. A circle of inspection found a fox track leading away toward the road. This trail was a walking one, without a break to show the fox had heard or even seen the hare.

An examination of the hare's trail proved the animal raced at high speed for some two hundred yards; then paused abruptly to listen, and suddenly fell to nibbling the bark of a sweet birch broken down by wind and

My Allies, the Yellow-Jackets

A Squadron of Angry Fliers Relieve a Tense Moment in the Round-up When the Forest Rangers Outwit the Lawless Cowmen

By J. A. FRIEBORN

CHARLES CLAYBANKS was a cowman of the old school, originally from Texas. He had, through his industry and his skill in throwing a long rope—not always, it was said, at his own cows—built up a large herd of cattle on the Tonto Forest. In fact, the Forest Service was satisfied that he had more stock on the forest than was authorized by his grazing permit, and it was decided to hold a round-up to get an accurate count of his cattle, as basis for trespass action against him. Deputy Supervisor J. H. Sizer was put in charge and I was detailed to help in the work. There were eight men in our crowd, and although Claybanks swore that we would not get a count, we were of a different turn of mind. Sizer and Claybanks finally came to an agreement whereby one of his men was to accompany one of ours at all times, in order not only to help count his cattle, but to work them as well, branding his calves, holding steers for sale, and doing the work of a regular round-up.

There followed three weeks of toil-filled, dinnerless days, when men became nerve-racked and horses footsore and angular. What a change three weeks make in the appearance of a round-up! What first appeared to be a crew of happy-go-lucky men with slick haircuts and horses with shining accoutrements became a motley bunch of villains on vicious-looking ponies. Where first they laughed and joked, they now swore in querulous voices. They discovered in their best friends faults and failings that they never knew existed—and probably do not.

Right in the middle of the tail end of this trying three weeks came the episode of the yellow-jackets. Until that fall I had always carried an antipathy for yellow-jackets, which, to say the least, was reciprocated. They had caused me to jump out of the tops of tall trees when I was repairing telephone lines; to stop work at a critical time and sprint for cover while fighting a fire; to get thrown from

a horse at the very feet of my best girl, and to do other things which hurt my feelings and disturbed what small dignity I may try to affect.

Claybanks' range was rather clearly divided by a ridge of mountains, on one side of which lay Soldier Camp and Gisela, and on the other he had a headquarters camp called Breadpan. The hills on that side sloped to Spring Creek, where his brother Bill lives. The fact that Bill had not joined the round-up by the time we had finished

the work on the Soldier Camp side had worried the foreman; so on the day we were winding up Soldier Camp he started me out to find Bill and bring him in. I started up a canyon to the top of the divide and found about five hundred cattle, which, from their actions, I was satisfied had recently been driven there. As this was in country which we had covered, I returned to camp and left with the

cook a note for Sizer, telling him what I suspected—that Bill had been working on the other side and had driven the stock he had gathered to a point he thought would be behind us when we moved.

Sizer took some men and gathered this stock and counted it. I rode up on the divide again and found the trail of Bill Claybanks and what proved to be his cousin, Vigil Pikes. They had been holding cattle in the Breadpan corrals, and had that night moved them to where I found them, on the Soldier Camp side. This scheme would have worked to perfection if I had not accidentally stumbled on the stock. I now rode to Bill Claybanks' ranch on Spring Creek, finding him at home and in fairly good humor. For obvious reasons, I did not tell him that the stock which he had so painstakingly gathered had been counted. From his reception of my suggestion that he join the round-up, it was evident that he had been instructed to avoid doing so if



possible; but after leading me a wildgoose chase for a couple of days, on mythical errands, one of which took us near my station, where my wife regaled us with fried chicken and fixings—a welcome change from round-up beans—he finally got discouraged and agreed to lend us his valuable assistance in completing the count on that side of the mountain.

In rough country, it is the custom to make short drives in different directions, a couple of men holding the herd. When we arrived at the hold-up we found one of Claybanks' and one of our men holding the cattle in an opening on a hillside. My friend rode out to meet me and told me to look out for Charlie Claybanks, as he had been making war talk about me. Needless to say, this made me feel very uncomfortable and I was seriously considering having business elsewhere, as I had joined the Service to work, not to fight. When the drive came in, Claybanks spied me at once and astride his horse came trotting around to my side. I could see that he was foaming mad. Every one who had been talking to me had business elsewhere, apparently expecting some sudden artillery practice.

Claybanks greeted me without passing any of the polite amenities, by calling me several sorts of names and asking me how I liked sleeping out on a saddle blanket and spying on folks. Not being entirely deficient in cow-camp billingsgate myself, I replied in kind, casting some reflections on his looks, antecedents, nativity, habits, etc.; also informing him that from all accounts he had acquired all his possessions in the manner he ascribed to me and should be an expert on the feelings of any one who was compelled to do it. In fact I was keeping my tongue busy to distract my legs, which had suddenly become filled with a violent desire to move. Our horses in the meantime had been circling and stamping around, imbued with the spirit of the moment, and now the most amazing thing happened. One or both of them, in their prancing, stepped into a yellow-jackets' nest, and the next thing I knew Claybanks' horse bolted off down the mountain, with Claybanks wildly slapping his own neck and face. I did not have long to enjoy this edifying spectacle until I was duplicating Claybanks' antics in another direction.

Scientists claim that bee-stings are an antidote for rheumatism and other forms of acid poisoning, one of which is anger. I am a convert to this belief since that day; for, after quieting his horse and bathing his swollen face, Claybanks rode around to where I was doing the same, and with a big smile he remarked that since even the bees were helping the Forest Service, he was going to quit trying to put anything over on Uncle Sam. I was glad to hear this, but had to protest that I didn't think they were so darn unswerving in their loyalty to the Service and its minions or they would not in the heat of battle have mistaken friend for foe.

This little incident and the resultant merriment, whenever any one looked at Claybanks or me, served to break the tension, and the rest of the count proceeded in an orderly and successful way. Incidentally, Charlie Claybanks was later killed by his brother Bill, over a cattle argument, at almost the same place where the yellow-jackets helped me out of an ugly situation.

The Burro Mule

By Earl H. Emmons

Sure he ain't no howlin' beauty,
'Cause he wasn't built for show;
And his temper ain't angelic,
Nor his voice ain't sweet and low;
And his ethics have no bearin'
On the plan of Golden Rule,
But he fetches home the bacon,
Damn his skin—the Burro Mule.

He will start a howlin' concert
In the middle of the night;
And it scares us half to death to see
Him chaw up dynamite.
He will balk at ev'ry river
And he'll stand there calm and cool,
But for all his blasted cussedness
We love the Burro Mule.

For he's been on ev'ry mountain
Since the climbin' art began,
And he ain't afraid of nothin',
Screechin' devils, ghosts or man;
And he somehow always saves the day,
Though he smashes ev'ry rule,
And dang few mountains would be clumb
Without the Burro Mule.

He has made a thousand records
Reachin' rough and lofty heights,
And he does his blasted danglest—
As accordin' to his lights—
He has helped to find a million mines,
From Nome to Anastoule,
And ev'ry trail is marked by bones
Of the broken Burro Mule.

Sure he don't know why he does it
And he doesn't get no pay;
He will sleep in mud and water,
Eat tin-cans if there's no hay.
He's a lop-eared, bat-eyed, wabble-jawed,
Ding-busted, knock-kneed fool—
But the Hall of Fame won't be complete
Without the Burro Mule.

A Forester In Oom Paul's Country

Experiences of An American Forester During Three Years In a Land as Scantily Clothed as the Natives Who Inhabit It

BY NILS B. ECKBO

TO MANY Americans the Union of South Africa means a jungle of trees overhung with fantastic climbers, boa-constrictors hanging from the limbs and lions lurking in the shadows. This picture, so full of adventurous interest, is really very erroneous, as 97 per cent of the land area is practically barren of trees.

Max O'Rell describes the country most aptly when he says: "In South Africa the land is scarcely more clothed than the natives who inhabit it. The grass grows on the earth and on the sides of the mountains as the hair on the heads of the Kaffirs, in little tufts here and there." Of the Orange Free State he says: "It is desolation, isolation, immensity." This is fitting to some of the other provinces as well, with their hundreds of square miles of open land similar to the great plains of western United States.

Outside the towns, the whites are sparsely sprinkled about the country, with natives outnumbering them more

than five to one. The majority of the whites hail from European stock, with inherent love for their own countries, but there is a tendency of unison among them and, with a rapidly growing love for the land of their adoption, a South African nation is in the making.

The life of the whites does not vary greatly from that of white people in other parts of the world. It is the blacks that characterize the country and catch the eye of the newcomer. In their native haunts, they live in rondavels with circular adobe walls and thatched roof or possibly altogether of thatch. These rondavels are picturesquely situated in groups, as the natives are sociable in their habits, except the Zulu, a mighty warrior, who glories in his own company and that of his wives. Located on some promontory, a wide view of the landscape serves to give him notice of oncoming

danger. He can also watch his stock, consisting of a few heads of cattle, sheep, or goats.

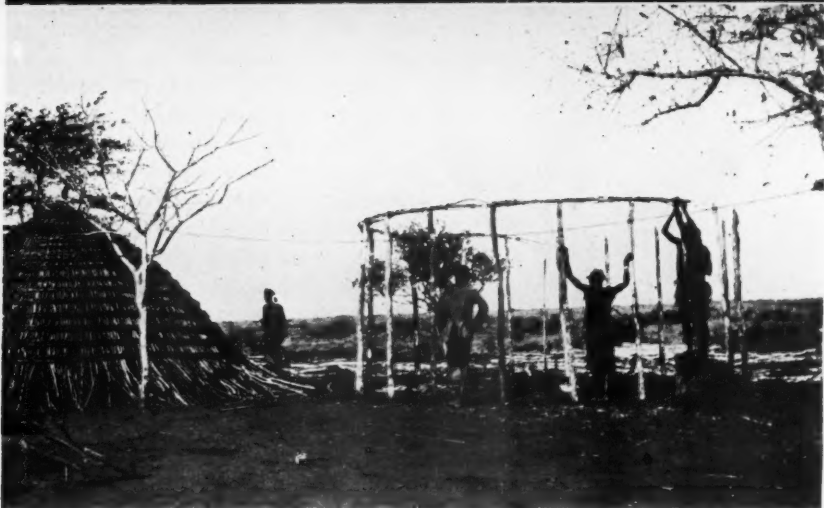


WATERBUCK (*COBUS ELLIP-
SIPRYMNUS*), THE AUTHOR'S
FIRST PREY



Photograph by K. A. Carlson

THERE IS NO RACE SUICIDE AMONG THE BLACKS AND, IN ADDITION TO DOING MOST OF THE WORK ABOUT THE KRAAL, THE WOMEN ARE PRIVILEGED BY THEIR LORDS TO RAISE CHILDREN APLENTY



Photographs by K. A. Carlson

Upper—A FOREST RANGER STATION AND SURROUNDING BUILDINGS. THE THATCHED ROOFS ARE PICTURESQUE AS WELL AS MOST COMFORTABLE IN A WARM CLIMATE

Middle—KAFFIR HUTS IN PROCESS OF CONSTRUCTION; SOMETIMES THESE ARE COMPLETELY THATCHED

Lower—A SABLE ANTELOPE (*HIPPOTRAGUS NIGER*) SHOT BY MR. J. A. LOMBARD. THE BEAUTIFULLY CURVED HORNS ARE HIS BEST WEAPONS

The diet of the Kaffirs is of the simplest. A small mealie (corn) patch is quite sufficient for the support of a family, with no other variation, but they sometimes glory in Kaffir corn, pumpkins, and an occasional meal of meat. The women do most of the work about the kraal, in addition to raising children in plenty. The female offspring is highly prized, because a virgin bucksome lass of marriageable age is worth several head of stock. This, in itself, is a safeguard to their moral life.

The full-grown males, or boys as they are always called, regardless of age, wander forth to earn a livelihood. Their earnings are invariably invested in stock, with which wives are purchased in due time. This is an ingenious arrangement, with its peculiar reward for thrift.

Forests in the eyes of the native are a doubtful asset. He must perforce rid the land of trees for his mealie patch and to provide grazing for his stock, and, in the olden days, to see the approach of enemy tribes. Through ages of burning the veldt, he has succeeded well in his purposes. Only about one million acres remain of once great forests, where the natural conditions afforded protection against fire.

Most of these remnants of forests are now secure, under the control of a well-qualified Forest Department. The largest contiguous body of timber is located along the coastal mountain range about Knysna, where the forest extends for some 110 miles in length by 10 miles in width. This and the many other forests in the Cape Province, Transvaal, Natal, and Transkeian Territories are of a truly semi-tropical nature and almost impenetrable in places. They contain a great number of valuable timber species, many of which have played an important part in the development of the country.

The yellowwoods (*Podocarpus sp.*) are large trees, reaching 10

feet in diameter and 100 feet in height, with a huge fantastic crown covered with drooping lichen. Being true conifers, they are interesting botanically, but it is the usefulness of the wood that makes them valuable. The yellowwoods served well in the days of the *voortrekkers*, when the semi-soft wood yielded building material for the early settlers. Many of these houses still remain, with their heavy wooden beams and wide planks for flooring and ceiling.

Stinkwood (*Ocotea bullata*) is a tree of no mean proportions. It has a hard, dark wood with a vivid grain, greatly enhanced by a beautiful natural sheen. No better wood could be found for furniture, for it is both strong and of exceptional appearance. The old Dutch furniture contains many gems like the four-poster bed, massive wardrobes with silver trimmings, gate-leg tables, chests, and slave-period chairs. Antique bits made by craftsmen of bygone days can still be found, priceless not only for their great sentimental value, but also for their rare design and workmanship.

The locally made wagon was an important adjunct to the early settler, and for this purpose many woods excelled. Yellowwood hubs, with assegai (*Curtisia faginea*) spokes and white pear (*Apodytes dimidiata*) felloes, made a trustworthy wheel. Ironwood (*Olea laurifolia*), as strong as its name signifies, proved excellent for the undercarriage, and yellowwood again for the wagon box made an outfit suitable to withstand the trackless wilds. These woods and many others are used in the building of bullock wagons and carts today, an entirely South African industry.

Sneezewood (*Pteroxylon utile*) and others were used for fencing, on account of their enduring qualities. All of these woods are still used, but they do not go far now in supplying the great demand. The only woods that have not found a local use and are ex-



Photographs by K. A. Carlson and Nils Eckbo

Upper—A BLUE WILDEBEEST BULL (*CONNOCHOCTES TAURINUS*) SHOT BY MR. K. A. CARLSON; THIS IS A POWERFUL ANIMAL, NOT UNLIKE THE BUFFALO

Middle—CAMP IN THE SAVANNA FOREST OF THE LOW VELD, A HUNTER'S PARADISE, BUT WHERE THE LIONS KEEP ONE'S NERVES CONSTANTLY ON EDGE

Lower—THE TRIUMPHANT DISPLAY OF TROPHIES—HIDES, HORNS, AND BILTONG—AFTER THE RETURN FROM THE HUNT

ported to foreign fields are the box (*Buxus macowani*) and kamassi (*Gonioma kamassi*).

In addition to the indigenous forests, there are numerous plantations of gums, pines, wattle, and many other trees, covering nearly six hundred thousand acres. These



THE WEIRD BAOBAB (*ADAMSONIA DIGITATA*) RESEMBLES A WITCH'S TREE FROM FAIRYLAND

tant factor in the general timber supply.

In addition to the forests already referred to, I would like to mention the open savanna forests of the Transvaal low veldt. They are of little or no commercial value at present, but they harbor a wealth of game unheard of in most other parts of the globe. There is the blue wildebeest (*Connochoetes taurinus*), in heads of fifty or more, roaming the veldt like the buffalo in the United States years ago.

The sable (*Hippotragus niger*) and roan (*Hippotragus equinus*) are antelopes of great size and wonderful fighters. The waterbuck (*Cobus ellipsiprymnus*) is a more peaceful animal, resembling somewhat the elks of Jackson Hole, Wyoming, with the exception of the horns. The impala (*Aepyceros melampus*), a small antelope, is considered the prettiest of them all. The hartebeest (*Damaliscus lunatus*) is unattractive, while the kudu is a stately animal (*Strepsiceros kudu*) which I have not had the good fortune to meet. The zebra is very common, but is not killed for its meat, and the ostrich is protected. Crocodiles are plentiful along the rivers, and snakes, leopards, and lions are not uncommon.

A shooting trip to this country is fascinating. Trek-

are being rapidly extended by both government and private enterprise and grow at a phenomenal rate. It will not be long before the yield from these plantations will prove an impor-

king through the veldt on a horse alongside a wagon with donkeys or bullocks is a slow mode of transportation, but the only possible one in many places. A small army of native boys are taken along to drive the animals, move camp, cook, carry the game to camp, and, in fact, for everything, including shining one's boots, as the custom demands. The whole picture seems peaceful enough until night comes, with its lighting of fires around the camp to ward off the roaring lions. One goes to sleep trusting that the lion will satisfy himself with a donkey, or, if he must have human meat, that he will select the black variety. Many are the accounts related of gruesome deeds of lions, and, whether true or not, they soon inspire the necessary respect for the king of beasts.

Having captured my share of most game after two weeks' shooting, and converted it into horns, skins, and biltong, I thought I was sufficiently proficient with the rifle to face a charging lion. So three of us went forth lion-bent and penetrated the country miles inland from our camp on a river. In an otherwise very dry country we ran across a water-hole with a fresh lion track leading to and from it. This was promising evidence, because the lion always returns to his water-hole for a daily drink. After a council of war, we decided to go back to camp, pack up



THE ZULU GONE A-COURTING. ALL DRESSED UP WITH FIGHTING STICKS AND SNUFF-BOX

blankets and sufficient provisions for several days, and return to the hole, where we would lie in wait and, if all went well, shoot our prey.

By the time we returned dusk had fallen and we had difficulty in finding the water-hole. We rode out on our horses in fan lines, searching for the hole. After riding about by myself for some time without luck, I started to return to the others before it got too dark. Suddenly I perceived a black object making



Photograph by Nils Eckbo

A YELLOWWOOD (*PODOCARPUS SP.*), RIVALING THE SUGAR PINE OF CALIFORNIA

[Continued on page 113]

The Story Old Father Tree Told His Children

BY MARGARET W. CHIPLEY

IT WAS after a long, hot, dry summer and just before all the trees in the forest were going to sleep for the winter, when Old Father Tree said to the Little Trees, "We will have our bedtime story now"; and the Little Trees stopped their whispering to listen; for, just like little boys and girls, they loved a story.

"It was a long time ago," said the old tree, "long before you Little Trees had even begun to grow, that this mountain side was covered with big trees of spruce and pine and fir, which made a beautiful forest, a home for the birds and wild animals. They were happy trees and often talked to each other of what they were going to be when their life in the forest was over. Some of the Little Trees just wished they were grown up, so they could leave the forest and go out into the world.

"One day, as I listened, one Little Tree said, 'When I'm grown up, I'm going to be sawed into logs and planks that will help to build houses for people to live in.'

"Another one said, 'I shall be part of the church where people go to worship God.'

"Another said, 'I'd rather be made into desks and chairs for the little children in the big school-rooms.'

"Oh!" said a Little Tree, who stood off by himself, 'I think it would just be fine to be part of a ship and go sailing across the waters to strange lands.'

"Believe I'd rather be the railroad ties and have big trains run over me safely from one part of the country to another," said one.

"And one tiny Little Tree piped up and said, 'I'd just love to be made into a little cradle and hold some tiny babe while he slept.'

"And so the trees of the forest talked on of the things they would be when they were grown; and while they were waiting, and growing tall and straight and strong, they made a home for the animals and birds of the forest and a place where little children could come, with their parents and teachers, for camping and picnics in the warm summer days. In the winter their branches caught the snow and held it, that the moisture might slowly sink into the ground and run off into little streams that helped to water the valley below and make the soil rich for the farmers' crops.

"And the long years went by; but to the Little Trees they did not seem long, for were they not happy and were they not growing strong, like little children, to take their places in the world? And they thought and dreamed and talked of the time when they would be used in the making of houses and ships, and desks and chairs, and many other things that I can't tell you about now."

Just then Old Father Tree stopped in his story, and the wind whistled through his

branches and sounded just like a long sigh, and the Little Trees said, "Go on with the rest of the story, Father Tree."

And Father Tree went on with the story, but the Little Trees could see that it made him sad.

"One day," he said, "there was a picnic in the woods—laughing, shouting, and playing—and the trees of the forest laughed and shouted with the children, though the children did not hear them; and when evening came they all went away, and the forest was dark and still; but in the night from somewhere there came a red flame of fire, a wind sprang up, blew the flames into the branches of the trees, and the poor Little Trees were helpless.

"All night and all day the fires raged through the forest, and then the wind stopped blowing and the rain fell on a mountain black and ugly and bare, where only yesterday there had been a beautiful forest. Only a few trees were left to tell you the story of the Little Trees who wanted to live, who wanted to be built into houses and ships and churches, and even into toys for the children and little cradles for the babies.

"We never knew what started that fire. It may have been a cigar thrown into the brush before it was put out, or a lighted match, or perhaps the camp fire was thoughtlessly left burning."

Old Father Tree stopped talking and seemed to be thinking of that time so long ago.

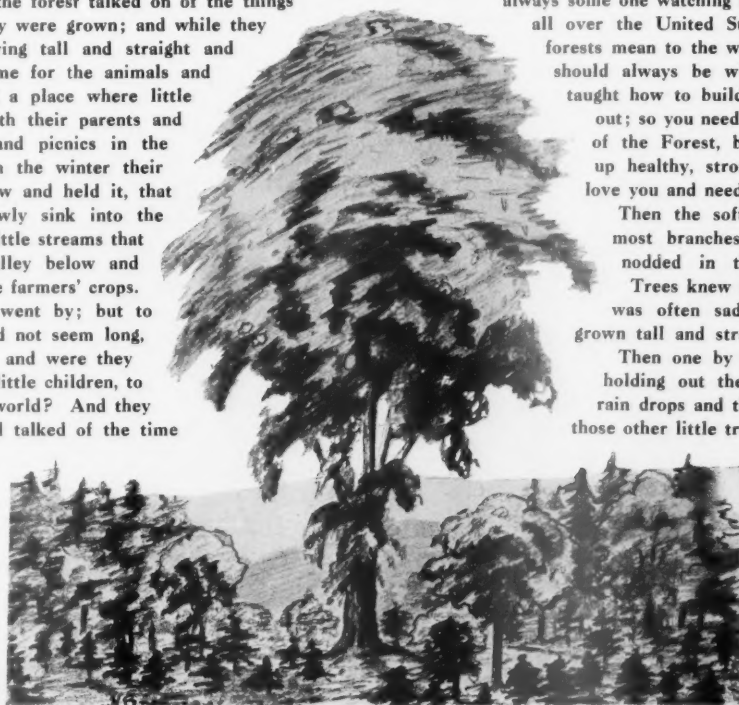
"Oh!" said the Little Trees, "We hope no big fire will ever burn us up."

And the old tree answered, "The forests are better cared for now. This is a forest that belongs to the Government, and Uncle Sam does everything he can to protect us. On high mountain peaks, in the summer time, when the danger of fire is great, there is always some one watching over us, and little children all over the United States are taught what the forests mean to the world, and how careful they should always be with their fires. They are taught how to build a fire and how to put it out; so you need not be afraid, Little Trees of the Forest, but go to sleep and grow up healthy, strong trees, for the children love you and need you."

Then the soft winds touched the topmost branches of the old tree and he nodded in the breezes. The Little Trees knew now why Old Father Tree was often sad and why he had never grown tall and straight and strong.

Then one by one they, too, fell asleep holding out their branches to catch the rain drops and the snow, and to dream of those other little trees who lived so long ago.

And when they awoke at dawn, they waved their tiny branches in the morning breeze and beckoned the sun to hurry over the mountain and bathe them in yellow sunshine, so that they would look their best when the Fire Guard on Patrol came to see them.



Knights of the Paper Trail

A Story of the Men Who Have Blazed from the Forests, with Swords of Chemical Magic, the Way to the Paper World of Today

BY LOUIS E. WISE

IF WE can give due credence to history as recorded by a Chinese encyclopedia, a jewel of unusual luster fell to the share of an emperor of the Han Dynasty in the year 75 A. D. The jewel was not a flawless diamond or a pearl of the first water, but a scholarly eunuch of the province of Keui-Yang, who in that year pledged fealty to the fortunate emperor, and who, by the use of his creative genius and high attainments, added to the many peaceful triumphs of the great Chinese Empire. Ts'ai-Lun, as the scholar was named, was especially interested in the making of permanent records. The old bamboo tablet and stylus, instruments of this art, he felt had outlived their usefulness, so he set for himself the task of making new writing materials. Some thirty years after he had come to the Chinese court, he produced the first hand sheet of paper, and that from the bark of a mulberry tree!

It must not be assumed that Ts'ai-Lun grasped his idea from thin air. Quite possibly he knew that various parts of other trees had been used long before his day. Palm leaves had served the early Egyptians. Olive leaves were used, ironically, perhaps, by the ancient Syracusans when they gave notice of deportation to their undesirable citizens. Even banana and poplar leaves had served as a means of recording the thoughts and deeds of the ancients. And, as for the barks of various trees, they had certainly served the Romans, for whom the word *liber* meant both *bark* and *book*.

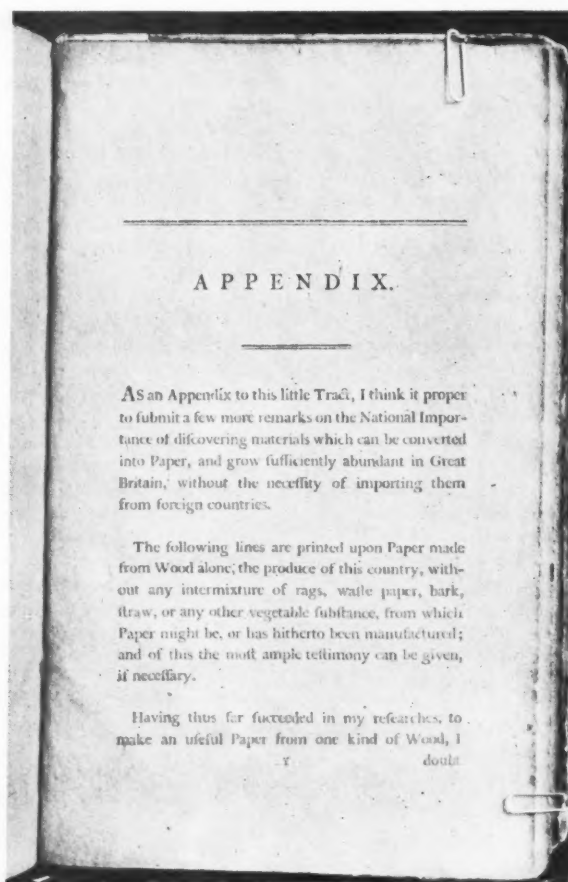
And yet Ts'ai-Lun stands in a class by himself. He did not use the crude inner bark of trees as the final

material on which to make his records. His genius permitted him to use this bark as a *raw material*, from which he produced a finished sheet of paper, and that by a series of processes which, crude as they were, must be considered the forebears of the manufacturing operations of today.

It has been recorded—and we hope that these records are not myths—that forty years after he had entered his emperor's service Ts'ai-Lun was raised to the rank of marquis—a fitting recognition for the man who first utilized a part of the tree in the manufacture of paper eighteen centuries ago.

From the time of the emperors of the Han Dynasty until the eighth century, China monopolized the art of paper-making. In fact, she kept rather quiet about the methods used by Ts'ai-Lun and his successors. In the early seven hundreds, however, after the battle of Samarkand, the Arabs captured China's secret and went into the paper business for themselves. They improved upon it quite materially—forsook the use of the mulberry tree and used linen and cotton rags in its place. Not until the dawn of the nineteenth century do we again hear of the use of any portion of the tree in the formation of a sheet of paper.

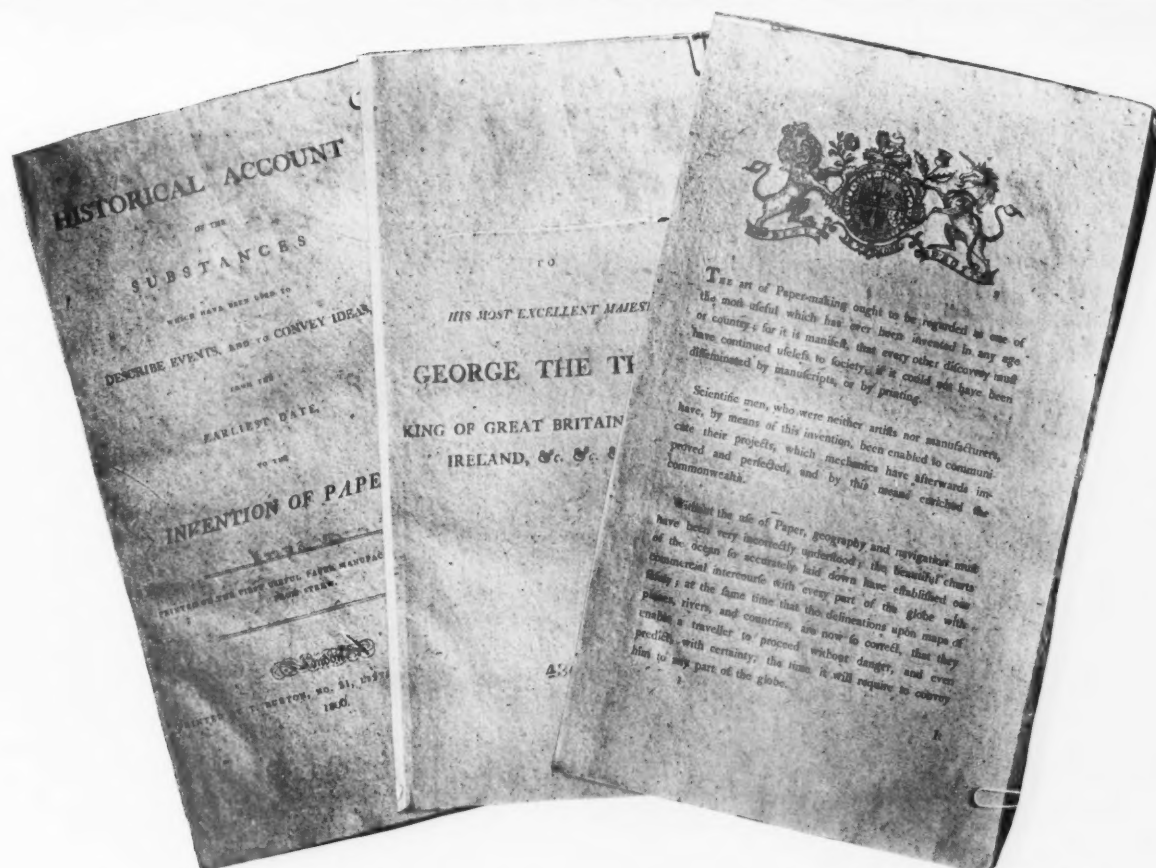
The Crusaders no doubt were instrumental in directing the attention of medieval Europe to the art of paper-making, which was introduced into Spain in the eleventh century by Moors. Thence it traveled, via Italy and France, into Holland. England was rather backward in following the art, and it was a Dutchman who introduced paper-



Photograph by G. Whipple

A PAGE FROM KOOPS' HISTORIC MONOGRAPH

This is, perhaps, one of the first examples of a hand-sheet made from "wood alone." Koops himself made this paper forty years before the commercial production of wood pulp.



Photograph by G. Whipple

PAGES FROM KOOPS' QUAIN'T VOLUME, PRINTED ON STRAW PAPER IN THE YEAR 1800 AND DEDICATED TO GEORGE III

Most of the paper used in this book, with its watermarks bearing the King's name and coat of arms, was made from straw, though the Appendix, as indicated, is made of wood alone.

making into America late in the seventeenth century. It is well to recall that throughout the epochs which marked the history of the art in Europe and America linen and cotton rags were the raw material *par excellence* used in all manufacturing processes. Rags became scarcer as the demands for paper increased, and, in spite of frantic efforts on the part of manufacturers, the entire American industry was threatened by dearth of its raw materials. The stage was now set for the introduction of a new substance in the manufacture of paper, and the struggles of well over half a century proved that this substance must come from the evergreen forests.

I have said that at the very dawn of the nineteenth century the tree re-entered the paper industry. Most books on paper-making would disagree and tell the reader that the first wood-pulp process was invented in 1840. We have rather good evidence, however, that the commonly accepted process was anticipated in the year 1800, when a quaint little volume, dedicated to George III, was printed in London. Its writer was one Mathias Koops, a dreamer, with his feet firmly planted on British soil. His title page reads: "Historical Account of the Substances which have been used to Describe Events and to Convey Ideas from

the Earliest Date to the Invention of Paper. Printed on the first useful paper manufactured solely from Straw."

In fact, *most* of the paper, with its watermarks bearing the king's name and coat of arms, is made from straw. The appendix, however, is printed on paper of quite a different sort. Here the paper-maker, Koops, tells us: "The following lines are printed on paper made from *wood alone*, the produce of this country, without any intermixture of rags, waste paper, bark, straw, or any other vegetable substance, from which paper might be or has hitherto been manufactured, and of this most ample testimony can be given, if necessary. Having thus far succeeded in my researches to make a useful paper from one kind of wood," adds our prolix friend, "I doubt not but that I shall find others equally eligible for the same purpose, of which I trust it will be in my power within a few weeks to give indisputable proof that my expectations have been well founded and that I have not cherished a visionary opinion."

It is interesting to speculate upon the antecedents and personality of Koops. We know little about him, and he is saved from oblivion by this little book. What wood did he use? What was the technic of his process? We do not know. We do know, however, that he made paper

from wood pulp, and good, durable pulp, forty years before the ground-wood process was "officially" discovered.

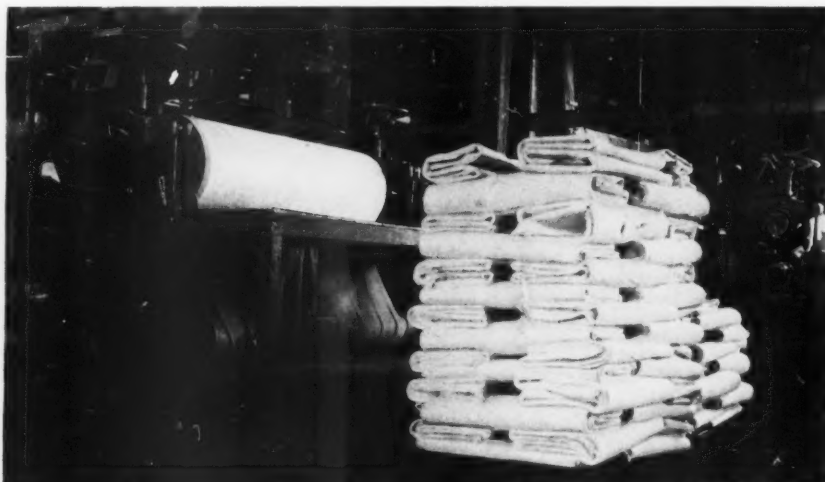
The chemist stepped into place in the history of pulp manufacture soon after Koops had written his monograph. Quiet little men, in France and in Germany, working in their isolated laboratories, and recording their results in obscure scientific journals, began to study the chemistry of wood. Their progress was painfully slow, but they collected some useful and interesting data. Wood, they found, consisted largely of two kinds of chemical substances: the doughty and resistant substance, *cellulose*, which comprised about half of

the weight of the wood, and its weaker sister, "lignin," which made up the greater part of the remainder. They discovered that a number of ordinary chemicals destroyed or removed lignin from wood, while the cellulose defied chemical wear and tear with the greatest pertinacity. This property of wood cellulose they realized must give it a future in the making of pulp and paper, and their conviction was strengthened when they found that the cellulose

of wood and the principal component of cotton and linen rags were (chemically speaking) "blood relations."

While these experimenters were at work, the ground-wood or mechanical pulp-making process came into being. As its name implies, it was entirely mechanical, not chemical, and it consisted in forcing coniferous wood, from

which the bark had been removed, against the surfaces of huge revolving grind stones. Water was used to keep down the temperature of the operation, and friction converted the wood into a pulp, which issued as a slush from the grinder. The mechanical process of today, with its enormous output of pulp for the production

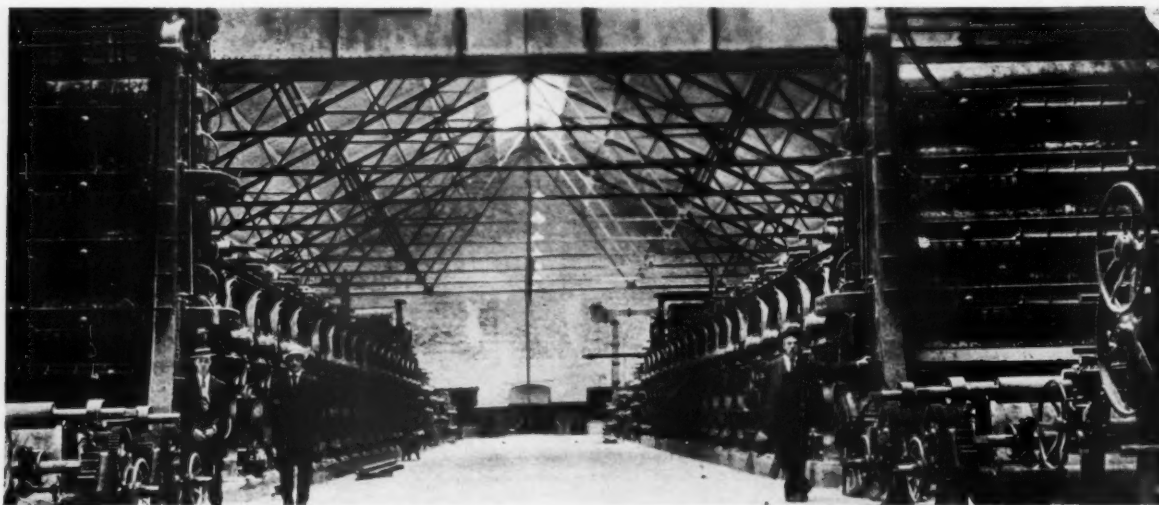


Photograph by H. E. Weston

LAPS OF SULPHITE WOOD PULP

These are made largely from spruce and hemlock. Through the efforts of the chemist on the trail ahead, the raw materials of the industry are being made to produce with the maximum of efficiency and the minimum of waste.

of newsprint, wall-paper, and wall-board, removes little or nothing from the original wood. It simply disintegrates the raw material, and the "weak sister," lignin, remains in the finished product. In spite of its colossal economic value—one and a half million tons were produced in America in 1920—mechanical pulp represents the lowest grade and the least permanent of paper-making fibers. Hence it cannot very well be used without ad-



Photograph by courtesy of the Pusey & Jones Company

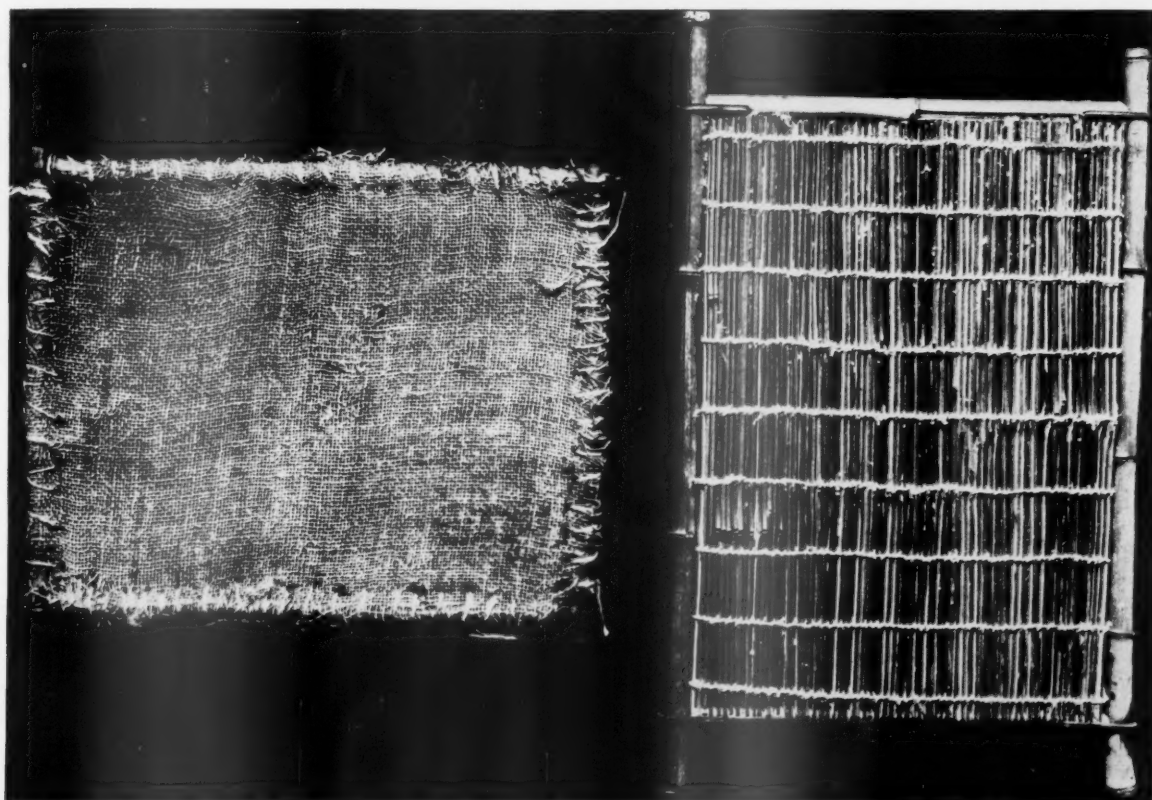
TWO OF THE GREAT MACHINES WHICH MAKE PAPER TODAY

This is the machine-room of the Ontario Paper Company, Ltd., of Thorold, Canada, and it indicates the immense capacity of some of the modern paper machines, whose insatiate appetites must be fed by our evergreen forests.

mixture of other products from which the lignin had been chemically removed.

The studies on the removal of lignin led to the discovery of the first chemical pulp process. In 1854 the English inventors Watt and Burgess found that water solutions of caustic soda would remove lignin from poplar and other hardwoods, provided a sufficiently high temperature was used. The resistant cellulose was left in a form suitable for paper-making, the caustic soda could be largely reclaimed, and ultimately the process proved to be economically feasible. It was a noteworthy step and later led to the manufacture of book, cover, and writing papers, but

industry, and every stage of its operation is closely scrutinized by the chemist, who analyzes the chemicals used in the process, supervises the production of sulphite liquor (as the water solution of sulphurous acid and calcium bisulphite is familiarly termed), and examines the finished product. The wood—most frequently spruce, sometimes hemlock and balsam fir—is used in the form of small chips, which are heated with the liquor up to 300 degrees Fahrenheit, in enormous steel digesters. Thus the chips are reduced to a pulp, which is blown into pits and thoroughly washed and screened before it is consumed by the paper mills of the world. In conjunction with “mechani-



Reproduced by permission from "Old Paper-making," 1923, by Dard Hunter

THE EARLIEST "PAPER MACHINES"

In strong contrast to the mammoth steel paper machines of today are these delicate bamboo hand frames used by the Chinese in the days of Ts'ai-Lun, that practical visionary of ancient China to whose efforts are due the credit for making, in the year A. D. 75, the first hand sheet of paper, from the bark of a mulberry tree!

in the beginning the process, like all chemical innovations, had to struggle for its very existence.

Not long after the civil war an American chemist, Benjamin Tilghman, made a still greater contribution to the manufacture of chemical wood pulp. Tilghman observed that the undesirable lignin in coniferous woods could be dissolved by the action of solutions of sulphurous acid and its lime salt, calcium bisulphite. This observation led to the great "sulphite process" for pulp manufacture, the process which gave life and endurance to the "mechanical process" and which made such great inroads into our ever-green forests.

Today the sulphite process dominates the chemical pulp

cal" pulp, "sulphite" pulp has become the component of millions of tons of newsprint. Alone, or admixed with rag stock, it has served in the production of ledger, bond, and many writing papers.

But we are getting somewhat ahead of our story. It might appear to the reader that Tilghman's process achieved instant success, and that the vast spruce resources of North America straightway supplied the raw material to a waning paper industry. In reality, Tilghman and his brother sank their efforts and fortune into a dismal venture which they both finally abandoned. After several years devoted to tireless research and after a brave struggle in which they overcame many of their earlier mechani-

cal difficulties, the Tilghmans were conquered by a drop in the price of caustic soda. The pulp they had produced was of good, serviceable quality, but they felt that in the end they could not compete with the older "soda" process.

To a Swedish chemist, Ekman, belongs the credit of making the "sulphite" process a signal success. Through his efforts the first sulphite pulp mill was erected at Bergvik, Sweden, in 1874, and today we still have some paper made from the pulp produced in this plant. An interesting commentary on the extreme conservatism of nineteenth century manufacturers may be found in a British journal, printed in the same year that Ekman's mill became a going concern and twenty years after the soda process had been introduced. "Great endeavors," writes an optimist in his English periodical, "have been made to introduce wood pulp as a fiber, but *practical* paper-makers deem it a failure!"

Are we a bit too malicious in expressing the hope that this skeptic was still alive in the year 1921, a dismal and depressing year in American industry, when over a million tons of sulphite wood pulp were produced in this country alone, and when over 75 per cent of the total pulp used in the paper industry came from the forest!

Benjamin Tilghman, Ekman, and their successors, while they gave the paper-makers a great process, presented the chemists with a grave problem, which has haunted them for half a century. Perhaps the nature of the problem can best be stated in terms of a few proximate figures. Every year some three million cords of coniferous wood, largely spruce and hemlock, are being used in the production of sulphite pulp. Less than 50 per cent of this wood actually enters into the composition of the finished paper. The rest, an equivalent of one and a half million cords of the most valuable species, is discharged, in the form of a dark, ill-smelling waste product, into the waterways of the country, polluting streams, killing the fish of the rivers, and representing besides a colossal economic loss. For years the chemist has worked with these waste liquors. Numberless plant and laboratory experiments have been made. Many industrial uses have been suggested, and a few, like those involving the conversion of these mill wastes into tanning materials, industrial alcohol, and road-binders, have been put into limited practice. Fortunes have been spent; but, despite everything which has been said and done, the pulp mills of America still disgorge their foul liquors, and the problem of their economic utilization remains unsolved.

In 1884 another important chemical wood-pulping process, which utilized small sizes of wood and mill refuse, appeared in Germany. It was invented by a man named Dahl, and, as usual, Scandinavian chemists and engineers investigated and stimulated the adoption of the process. Its introduction into the American industry, however, did not come until well after the dawn of the twentieth century, and its growth has been comparatively slow. A cousin to the old "soda process," Dahl's invention also involved the alkaline treatment of wood. However, sodium sulphide was used, together with caustic soda, in removing the lignin from cellulose. The process became known as

the "sulphate process" (although sulphates were never employed as the *active* chemical agents), and this rather dubious name has become a fixture in the industry. "Sulphate pulp" is also termed "Kraft pulp," and "kraft" in Swedish and German means *strength*. This is a more fitting name, since some of the strongest and most durable wrapping papers have been made by Dahl's process.

The manufacture of "kraft" pulp has never been very popular with persons having delicate nasal passages. It is a highly odoriferous process and the vapors evolved during the "cook" would be admirably suitable to a gas attack. Chemists are still at work seeking to obviate these nauseating odors, but at present a sulphate pulp mill has the landscape pretty much to itself. In spite of these drawbacks, the kraft process has a very promising future. It can utilize resinous wood wastes, which do not lend themselves to treatment by the "sulphite" process and for which the old soda process is too drastic. Furthermore, the pulp yields obtained from conifers by the sulphate manufacturers are generally higher than the corresponding yields in the soda process. The sodium sulphide appears to mitigate the destructive action of caustic soda, and to produce a pulp which has not been robbed of its strength or its flexibility. These properties permit its use in the making of washable fabrics, like aprons, sacks, and overalls, and even in the production of artificial shoe leather.

While at present there are but the three well-recognized chemical processes for wood-pulp manufacture, the chemist would be the last man to admit that the chemical utilization of wood in pulp-making had reached its zenith. New data dealing with the chemistry of wood are coming daily from the laboratories of plant, university, and experiment station, and often these have a very valuable practical bearing. Only a few years ago an Italian technologist, Cataldi, using the chemical data furnished by British chemists, showed that it was economically possible to produce chemical wood pulp by treating poplar (or hemp) with chlorine (the poisonous gas used so extensively in the early stage of chemical warfare). His process has received some attention in Italy, and it is claimed it gives a high grade and high yield of pulp. However, it is still an "infant" in the paper industry, which has not been adopted by the pulp-makers of the United States.

The responsibilities of the chemist do not end with his control of chemical pulp production. The manufacture of pulp into paper, while it demands the genius and guidance of the mechanic and the engineer, also requires the supervision and experience of the chemist. Pulp is not the only material that goes into most papers, nor does it go into paper without chemical or physical change. Bleaching agents, which improve the color of wood pulp; sizing material (like rosin soaps), the addition of which makes the paper less absorbent; mineral fillers, which add to the smoothness and opacity of the papers, and dyestuffs, which give the paper the desired tint or shade, all must pass muster with the chemists. So must the finished sheet, when it leaves the mammoth paper machine.

Thus the chemist has become one of the guardians of

[Continued on page 114]

Scouting for Gypsy-Moth Eggs

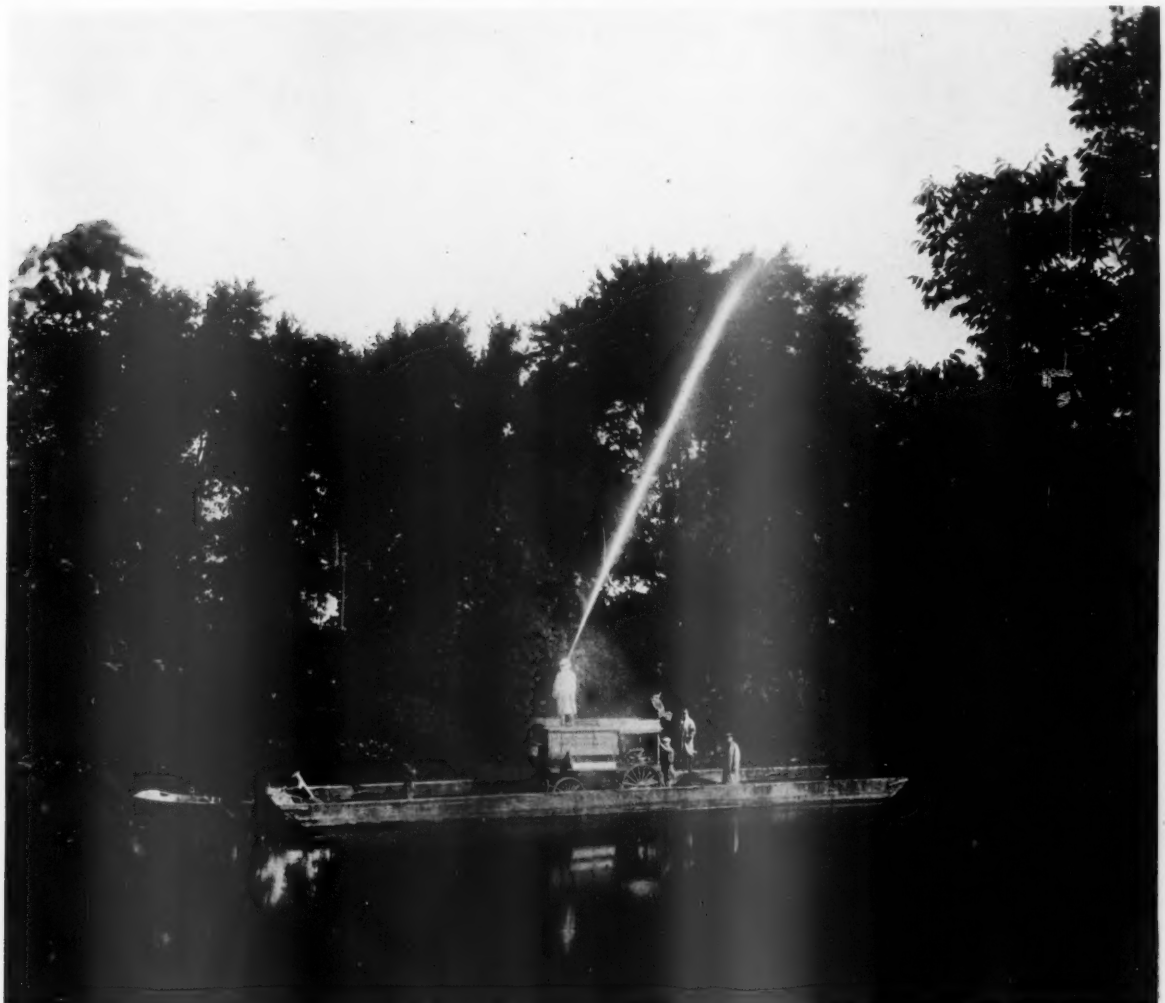
How New Jersey, Aided by the Federal Government, Is Protecting Its Citizens Against Loss of Their Trees from the Advancing Hordes of Gypsy Moths

By HARRY B. WEISS

WOULD you pay \$247 for a collection of gypsy-moth eggs? Probably not, but this was the approximate cost to the State of New Jersey and the Federal Government combined in locating and exterminating each egg mass of the gypsy moth during the third year of their campaign against these destroyers of the wooded landscape. We are accustomed to think of eggs in terms of dozens, but this unit has no place in gypsy-moth lexicon. The scouts count the eggs by the "mass," a collection of minute eggs deposited at some

point on a tree, and from which hundreds of caterpillars later emerge and strip the tree of its foliage.

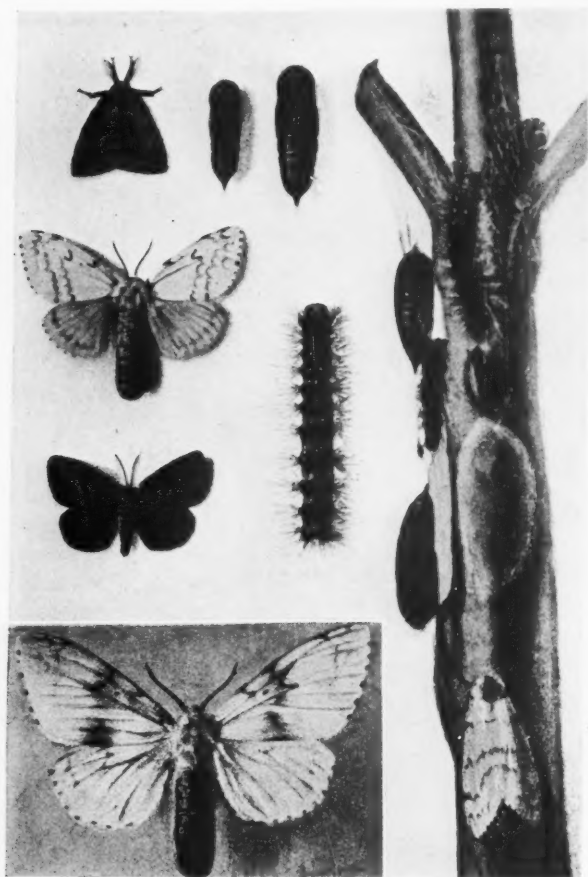
When the moth was first discovered in New Jersey, three years ago, a scouting of the territory revealed an insidious infestation which covered parts of six counties and consisted of 855 colonies of the gypsy moth, containing a total of over 3,000,000 egg masses. By three years of tenacious and persistent work, the number of colonies has been reduced to a known number of 98, containing 1,182 egg masses. During the past year the state and



A PICTURESQUE SCENE OF MOTH DESTRUCTION. THE HIGH-POWERED SPRAY IS APPLIED TO TREES ALONG THE BANKS OF THE DELAWARE AND RARITAN CANAL, THE SPRAYER BEING MOUNTED ON A BARGE

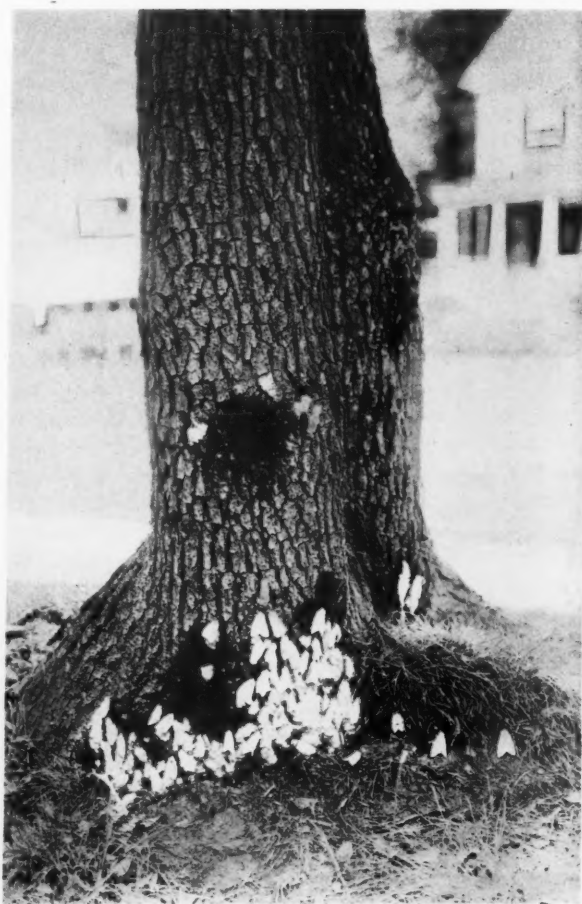
federal agencies together expended a total of \$292,000. At first glance this may appear to be a high price for gypsy-moth eggs, but one should consider the fact that the insects emerging from these eggs, if not destroyed, would do many times that amount of damage, and send forth millions of new gypsy moths, which eventually would destroy trees aggregating hundreds of millions of dollars in value. Furthermore, with the expenditures made, the gypsy moth in New Jersey is effectively being brought under control and its advance southward through the state and into other states is being stopped.

The gypsy moth does all of its damage in the caterpillar stage, and such trees as apple, the various species of oaks, gray birch, alder, and willow are favorite food plants. When the caterpillars are plentiful, nearly all deciduous trees are fed upon. Pine is injured when the caterpillars attain some size, and in New Jersey spruce was eaten almost as readily as many of the deciduous trees. The caterpillars hatch early in the season and feed on the opening leaves. Sometimes trees may be entirely stripped



Courtesy U. S. Bureau of Entomology

STAGES IN THE LIFE OF THE GYPSY MOTH: AN EGG MASS ON THE CENTER OF THE TWIG; FEMALE MOTH OVIPOSITING JUST BELOW; FEMALE MOTH SHOWN JUST TO RIGHT OF THIS. MALE MOTH WITH WINGS FOLDED IN UPPER LEFT; MALE CHRYSALIS AT RIGHT, WITH LARGER FEMALE CHRYSALIS AT RIGHT OF MALE. THE LARVA, SOMEWHAT REDUCED IN SIZE, IS SHOWN IN THE CENTER



Courtesy U. S. Bureau of Entomology

FEMALE GYPSY MOTHS BUSILY DEPOSITING THOSE CLUSTERS OF EGGS WHICH HAVE PROVEN SO COSTLY TO THE STATES WHICH THIS INSECT HAS INVADDED

of foliage by the end of June. Trees defoliated for several successive years become so weakened that they succumb readily to the attacks of certain wood-boring insects and finally die.

The moth was probably introduced into New Jersey on blue spruces imported from Europe about 1910 or 1911, but was not discovered until the middle of 1920, by which time it had succeeded in defoliating several acres of spruces and spreading over a territory of some 900 square miles. Prompt action by the New Jersey Legislature and Congress in supplying funds, and by the Federal Bureau of Entomology in supplying men, resulted in effective exterminative work getting under way shortly after its discovery. For the past three years this work has been prosecuted with gratifying results.

The infested territory was mapped out into divisions, each division being placed in charge of a division foreman. Each division foreman directs the work of several crews, each crew consisting of a foreman and seven or eight men. These crews scout the territory for egg masses, looking at every tree, fence post, etc., where the egg masses are likely to be found. Every egg mass found is painted with creo-



THIS PHOTOGRAPH SHOWS SOME OF THE EQUIPMENT USED IN THE BATTLE AGAINST THE GYPSY MOTH IN NEW JERSEY. THE MOTOR-MOUNTED, HIGH-POWERED SPRAY REACHES TO THE TOPS OF THE TALLEST TREES. BROADER, FAN-SHAPED SPRAYS ARE USED FOR LOWER FOLIAGE

sote, which kills it. The work of the scouting crews is checked by specially picked men, called trailers, who go over the territory again for egg masses missed by the first crew. Most of the scouting is done when the foliage is off the trees, as egg masses are more easily found at such a time. After the scouting season is over, the area where the eggs were found is sprayed with arsenate of lead, in order to kill caterpillars hatching from eggs which were missed. From seventy-five to one hundred tons of lead have been used each season, and this necessitated during the third year the operation of twenty-one high-pressure, motor-spraying machines, these machines being necessary in order to apply the poison to the tops of the tallest trees even when, on account of a lack of water in a neighborhood, the spraying had to be done a mile away from the machine. In addition to the creosoting and spraying, much chopping work was done. Partly dead trees, with broken limbs, cavities, and loose bark, which afford hiding places for the egg masses, were cut down and their menace

removed for all time. During the caterpillar season, in June, thousands of trees were banded with burlap and sticky material in order to trap the caterpillars, these trees being visited each day and the insects killed.

At the end of three years of intensive application of these methods, the infestation has been reduced to ninety-eight colonies totaling 1,182 egg masses. These ninety-eight colonies have, of course, been destroyed and the fourth year's scouting is under way to determine what has been left. In addition, some nine independent and small infestations scattered over the northern part of New Jersey have been exterminated completely, as nothing has been found at such places for two years. These results show what can be done in an exterminative way when sufficient funds and men are available. Due credit should be given for the success to the federal men, whose long experience with the moth in New England was of extreme value in New Jersey.

New Jersey is almost at the cross-roads. To date, close

[Continued on page 114]

Senators Stress Evils of Forest Depletion

After Thorough Investigation, Senate Committee Advocates More Public Forests and Special Measures to Encourage Private Reforestation

"At the rate at which the visible timber supply of the country is being reduced and the very meager and inadequate rate at which it is being replaced, it is evident that restrictions in the use of wood will be forced upon the American people far beyond the possibility of substitutes or economies to make good. We face a very serious situation, with far-reaching effects upon American industry, upon agriculture, and upon standards of living."—*Extract from Senate Committee Report.*

THE Select Committee on Reforestation appointed by the United States Senate last winter to investigate problems relating to reforestation and to recommend a forest policy for the nation, submitted its report to the Senate on December 9th. Considering the magnitude of the problems and the great amount of testimony which the committee gathered, its report is brief, but it covers, in an enlightening and summary way, the forest situation now confronting the United States.

The committee first reviews the state of deforestation in the different regions of the country, a reading of which leaves no doubt of the fact that in all regions excepting the Far West the nation's capital stock of wood has been seriously and alarmingly depleted. Commenting on this situation broadly, the committee states that one of the most serious aspects of the national situation is the unbalanced geographical distribution of our remaining timber.

"An important part of the surface of 39 states is forest or forest-growing land," the report points out. "From 40 to 60 per cent of the area of many eastern states, with a dense population and highly developed industries, like Michigan, New York, and Massachusetts, is land of this character. Yet but very few of the eastern states contain merchantable timber in quantities corresponding to their areas of forest land. Seventy-five per cent of our remaining virgin growth and 60 per cent of all the usable wood in the country are concentrated on one-fourth of the acreage of timber-producing land, in the states comprising the Rocky Mountain region and the Pacific Coast."

One of the effects of this unbalanced distribution resulting from forest depletion in all other regions of the country is clearly reflected; the committee reports, in the price of lumber. It states:

"The price paid by the average user of every-day construction lumber has more than doubled within the last twelve years; indeed, the freight now paid on lumber is often more than its delivered price 30 years ago. Within the past 80 years the average retail price of lumber has advanced three and one-half times as rapidly as the index price based upon all staple commodities."

"As far as the data available permits striking a balance," the report continues, "it appears probable that the remaining saw timber of softwood species is disappearing approximately eight and a half times as fast as new growth is replacing it. Our hardwood saw timber is disappearing approximately three and a half times as fast as it is being replaced. . . . The stock, or capital, of timber in the United States has already become too small to support the present consumption of forest products, and its depletion is steadily continuing."

"At the rate at which the visible timber supply of the country is being reduced and the very meager and inadequate rate at which it is being replaced," the committee declares, "it is evident that restrictions in the use of wood will be forced upon the American people far beyond the possibility of substitutes or economies to make good. We face a very serious situation, with far-reaching effects upon American in-

dustry, upon agriculture, and upon standards of living." Other pertinent and disturbing facts which the committee reports are:

"The country has accumulated 181,000,000 acres of logged and burned forest land which has not been put into cultivation or otherwise utilized. Eighty-one million acres of this land have been so denuded as to be practically barren."



SENATOR CHAS. L. McNARY, CHAIRMAN, AND SENATOR GEORGE H. MOSES, A MEMBER, OF THE SELECT COMMITTEE ON REFORESTATION, STUDYING FOREST CONDITIONS IN THE APPALACHIAN MOUNTAINS. OTHER MEMBERS OF THE SENATE COMMITTEE ARE SENATORS JAMES COUZENS, DUNCAN V. FLETCHER, AND PAT HARRISON

[Continued on page 115]

Forests for the Nation

Recognized Severity of Forest Exhaustion Demands Speedy Extension of National Forests in the East

A Proposed Measure

AN IMPENDING shortage of forests confronts the American people. The fact is indisputable.

"We face a very serious situation, with far-reaching effects upon American industry, upon agriculture and upon standards of living," the Senate Committee on Reforestation warns Congress, after an exhaustive study of forest destruction in the United States. The official investigation by this committee and the unofficial investigation by the Forestry Committee of the National Chamber of Commerce reached the same conclusions as to the effects of wholesale destruction of forests in this country and the dangers of disaster if strong remedial measures are not taken. These investigations confirm previous findings of the Forest Service.

Further investigations are unnecessary. Those already made furnish abundant proof of the actual situation. The time for action is at hand. The vote on the National Chamber of Commerce referendum, country-wide expressions from the press and from organizations of every character are abundant proof of the overwhelming sentiment in support of action. Public judgment of further delay can render but one verdict, that of irresponsibility of public welfare.

The task of forest reconstruction is large. It cannot be disposed of by half-way measures which do not even offset the accumulating effects of current destruction. It cannot be solved at one stroke, but remedial action must begin with big measures, directed along lines which promise greatest results. There can be no doubt that the most urgent and promising course of action is a speedy enlargement of the National Forests in the eastern half of the United States, which contains the bulk of our population and industry and where the effects of forest destruction are already being seriously felt. An enlargement of federal forests in this region can be accomplished only by federal purchase.

Unfortunately, the Weeks Law restricts the purchases of forest land to areas which exert an influence on the flow of navigable streams, and thus does not permit the acquisition of forests where most urgently needed. Immediate legislation should be provided to permit the Federal Government to acquire forest lands solely for timber production. Unquestionably the most urgent need from the National standpoint is a partial restoration, at least, of the magnificent forests of the Lake States and the protection, restoration, and intelligent management of large areas of rich timber-producing land of the South Atlantic and Gulf States. National Forests, wisely distributed throughout these regions and aggregating a total of five million acres in the Lake States and an equal area in the South is none too large an objective for attainment in the next ten years.

Many times this area of unused lands, unsuitable for agriculture, are available.

The country has too long accepted without protest or inquiry the dictum that Congress is without constitutional authority to appropriate money for the purpose of purchasing lands for the production of timber. The verdict of history probably will be that the

constitutional objection was raised primarily by anti-conservationists who were not so much interested in preserving the sanctity of the Constitution as in defeating the passage of the original Weeks Law. As a matter of fact, their opposition postponed the enactment of the Weeks Law for about a decade, during which period of postponement irreparable damage was done to our forests and watersheds and the price of lands advanced, so that the Federal Government will in the end be required to pay probably ten times as much for these lands as would have been necessary if prompt action had been taken.

The directors of The American Forestry Association feel that the time has come to call for a show down on this question. There is printed on this page a proposed measure which takes up the problem and the fight where the Weeks Law leaves off. If this measure should be enacted into law, lands in the Lake States and lands in the South, which once produced the finest timber on the continent, could be restored to that use. The bill provides for an authorized expenditure of \$55,000,000, during a period of ten years, a sum too small rather than too large to start with. An authorized expenditure of one hundred million would be more in keeping with the size of the problem. The bill is, therefore, a moderate one.

The constitutionality of the Weeks Law has been sustained by the Supreme Court.

In fact, in the test litigation the case against it broke down when it was shown that the consent of the state (the decision was on a Tennessee case) had been given to the purchase of such lands. This measure also requires advance consent by the state, not because it is believed to be essential to the constitutionality of the measure, but because it assists in removing lingering doubts upon that point and is believed to be good administrative policy.

The Association is well advised that the suggested measure is constitutional. Action of this kind is undeniably needed in the public interest and has public backing and support. It should be promptly enacted into law. The Supreme Court is the court of last resort to determine finally the constitutionality of any measure. Unless Congress takes affirmative action that court has no opportunity to speak. If doubts exist (which they should not) as to the constitutionality of this measure, Congress should resolve the doubt in the public interest and thereby allow the Supreme Court to render a decision.

A Bill

To authorize the purchase of forest lands for the purpose of restoring their forests and providing a national supply of timber, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, WHEREAS the wholesale destruction of forests in the United States and the rapid diminishing of the nation's timber supply is a menace to the nation's security and general welfare, the Secretary of Agriculture, with the approval of the National Forest Reservation Commission, is hereby authorized to purchase in any state cut-over, burned, denuded, and other forest lands, not generally suitable for agriculture, for the purpose of restoring the forest and promoting timber production, watershed protection, flood control, soil conservation, and the distribution of forest products and benefits. Before any lands are approved for purchase by the Commission said lands shall be examined by competent examiners employed by the Secretary of Agriculture and a report made to him showing that the control of such lands by the Federal Government will promote the purposes of this Act. All lands so acquired shall be subject to all regulations and laws applicable to lands purchased under the Act of March 1, 1911 (36 Stat., 961), as amended. No lands shall be condemned for purchase or acquired under the provisions of this Act in any state unless such state shall first have given its consent to the operation of this Act.

Sec. 2. That, for carrying out the purposes of this Act, there is hereby appropriated out of any moneys in the Treasury not otherwise appropriated, the sum of \$1,000,000 available July 1, 1924, \$2,000,000 available July 1, 1925, \$3,000,000 available July 1, 1926, \$4,000,000 available July 1, 1927, \$5,000,000 available July 1, 1928, \$6,000,000 available July 1, 1929, \$7,000,000 available July 1, 1930, \$8,000,000 available July 1, 1931, \$9,000,000 available July 1, 1932; \$10,000,000 available July 1, 1933; in all, fifty-five million dollars available until expended.



REAPING THE HARVEST

Mr. Deering at Waterboro during a lumber operation on a tract of 80 acres harvesting the crop, conclusive proof of the sane and farsighted policy which he has followed in his practical forestry operations.

FOREST PEOPLE

"Get a Living and Let Your Forest Grow"

BY AUSTIN CARY

BY THIS MOTTO W. B. DEERING, OF MAINE, HAS DISPROVED THE OLD ADAGE THAT "YOU CANNOT EAT YOUR CAKE AND HAVE IT, TOO"

A TRAPPY-LOOKING horse and wagon and a wiry, alert, pleasant-faced man driving—these are my first recollections of Mr. W. B. Deering, of Hollis, Maine. I was to lecture that evening to the local grange; Mr. Deering, master of the body at the time, had come to the station to meet me. But, over and above that, he wanted to show me his own woods and get my judgment on their handling; that, in fact, we made our immediate business.

Three specific things stand out clearly today, though that was sixteen years ago: First, a body of the beautiful pine and hemlock timber of York County, of large value then and gaining in value, as we both believed and as the event proved—Mr. Deering's financial reserve and backhold. In his hands, however, it wasn't a stagnant thing; from time to time he was cutting out of it, realizing some cash, but with the idea also of improving its quality and growth rate.

Next he showed me a cordwood operation lately completed—cut, too, with the idea of forest improvement. It was a piece of hardwood growth with young pines underneath. Mr. Deering wanted those pines to have that ground, and on the side the money from the hardwood would be welcome; so, after felling the latter with reasonable care and cutting it into sled lengths, he had hauled a gasoline wood-saw into an opening near by, singled out

his horses to twitch the cuts in, sawed, split, and piled the wood with enough crew, and had finally realized \$1 a cord net for it, selling much of it to neighbors who had plenty of their own, but not the genius to get it out so economically. Then there were the young pines, free now for rapid growth.

Last of the things I remember was a reproduction cutting in pine timber. Bills of the young folks were coming in heavy, perhaps. I don't remember why it was felt desirable to do so, but for some reason Mr. Deering had concluded to cut (and also to reproduce) a certain small piece of his forest. Several years before my visit the first cutting had been made, after which a full reproduction of young trees had followed. It could have been no better and was then old enough to free. Mr. Deering's plan was to strip off the balance of the old timber the next winter, when snow enough to protect the young trees was on the ground.

And what did I think? Numerous things in detail, probably—I don't remember now—but the main thing, which interested me very much and which I felt perfectly sure of, was that I had struck a real forester. Of propagandists, there were many then as there are more now; also professors of forestry, students of forestry, writers on forestry, etc. Here, however, was a man actually doing the thing itself, and that on his own farm, for his

own benefit, guided by his own observation and thinking.

Much water has run over the dam since then; also much, as I found out later, had preceded.

Thirty-eight years ago this winter—Mr. Deering was then 21 years of age—his father died, leaving him by way of legacy a debt incurred by signing other men's notes of \$6,000. By the time he was 27 that debt was paid. Hard labor and the timber of the 400-acre farm did it. And right there is an interesting point. In the fall before his father died they two went over a piece of the farm pasture, debating if they should not the next spring plow it up and put it in cultivation. The father's death prevented this, and one of the photos shows what has resulted. Two hundred and fifty dollars an acre is low for the value of the pine timber standing on that land today. It is, too, a resource that can be realized on any day.

The old farm was cut for its pine timber to about 12 inches on the stump, closely for those times, and the logs, delivered by ox team at a mill four miles away, brought \$9 a thousand. Thus was the debt paid. Then Mr. Deering, free in mind and married now, went on in the line in which he was brought up, as a farmer. But the woodland on the farm was not forgotten. He and his neighbors have, in fact, developed a saying which, as an economic guide, seems to fit their circumstances admirably and to be worthy of wide adoption among country dwellers. It runs this way: "Get a living and let your forest grow."

So the years passed. The farm, cows, and orchard absorbed their due of care and labor; a little experience in portable saw-milling came along; land-ownership was added to somewhat; also two children grew up and were being educated. All this time the value of timber was advancing, and finally, in 1917, with our participation in the

war, came values and the prospect of values that looked extremely promising. With his training, Mr. Deering was ready, and he saw that the time had come for him to realize on his second crop. That he has largely done today and, Fortune, as usual, helping the man capable of helping himself, brought results handsomer than were anticipated. With a splendid farm of close to a thousand

acres of timber land, cash and credit to do anything reasonable he may wish to do, esteemed by neighbors, who have lately given him public office, few men anywhere are in happier circumstances. A double wedding at the Deering home last June signaled the prosperity and the worth of the family.

And forestry in this man's career is not ended, either, but just beginning. The manufacture and growing of timber, looking thoroughly attractive to him and the business itself fitting his likes and training, he has freed himself of servitude to the dairy farm and definitely gone into timber as a business. And he is openminded, and progressive in that technically named processes that bring actual results are within his intentions, practiced on a small scale already.

A career like his is stimulating and instructive; the more so because the way is open for so many like it. Readiness, industry, and thrift characterize it on the personal side. On the other are the inevitable changes

in this country's timber affairs, bringing successive opportunities. More than this, we do need to "solve the National Forestry problem," as we often put it. But men like Mr. Deering we need as a living part of that solution, and no one thing will figure larger. Here's to the men of mind and stamp to follow Mr. Deering's example! May their number be large. May they see their opportunity! May the appreciation of their countrymen go with them!



W. B. DEERING

The man whose motto was "Get a living and let your forest grow," and a bit of the net result of its active practice—pine land worth well over two hundred dollars an acre.



Skiing on the Routt Forest

By C. H. VAUX

BY LEAVING Steamboat Springs, Colorado, at 6 in the morning, a twenty-mile trip by stage (so-called; in reality, a two-horse sleigh) up the wonderful Elk River Valley brought us to the village of Clark just in time for a regular dinner at the local "hotel."

following the curved line of the snow on top of it. As the snow was cleared away, the timbers groaned and creaked, and finally, when the snow was all gone, they came back almost to their original position again. Had the bridge not been cleared it would in all probability have gone out when the break-up came.



THE TRAPPER'S CABIN IN DIAMOND PARK

After dinner, Ranger Leonard and I strapped on our skis, slung on our packs, and took the trail up Elk River for the ten-mile hike to the North Fork Ranger Station, which we reached about 5 o'clock in the evening. We tuned up the old stove and soon had everything warm; whereupon we proceeded to get outside of two squares before going to bed.

The next morning, after shoveling the snow off the shed roof to keep it from breaking down, we went to examine several bridges, which had to be cleared of snow to keep them from breaking. One was already broken and another was in a canyon where the snow had drifted so deep that it was impractical for two men to attempt to dig it out. The third one was badly bent, but not broken, and Ranger Leonard proceeded to clear it off.

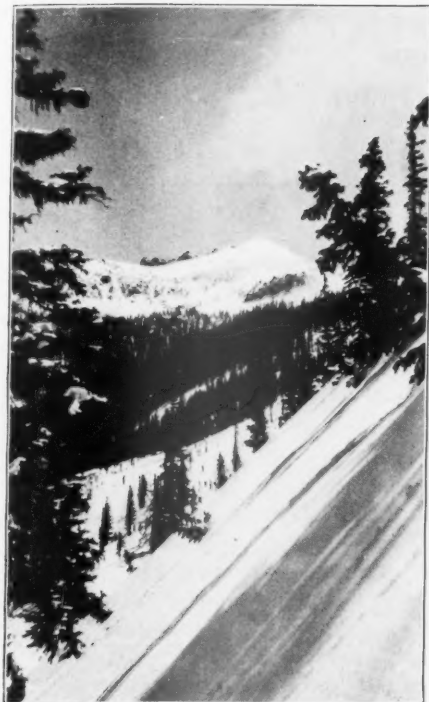
As can be seen in the picture, the snow had combed over a great deal, and the sag in the bridge can be seen by

After clearing the bridge, we had just time enough to make a trapper's cabin six miles up the North Fork of Elk River, in Diamond Park. It was a disagreeable day, with a leaden sky spitting snow in our faces all the way up, and the park was a dreary waste when we got there, at dusk. We met old Pat, the trapper, a short way from his cabin and went on in to his place just before a storm started. The wind whistled about and we could hear the snow sifting around the edges of the cabin while we were preparing and eating supper, and we were mighty glad we didn't have to camp out in the open. The

storm lasted only a couple of hours, however, and when it was over we stepped out to see how the signs were for good weather in the morning. The moon had come up cold and clear and had transformed the dreary waste into a land of innumerable sparkling crystals. It was a sight worth a long trip to see and one that pointed clearly to the origin of the park's name.



WONDERFUL SCENERY LAY ALL ALONG THE TRAIL



Above—THE WHITE CAP OF LITTLE AGNES MOUNTAIN LOOMING UP IN THE DISTANCE

Below—RANGER LEONARD CLEARING THE HEAVY SNOW FROM THE SAGGING BRIDGE



We were off for Little Agnes Mountain in the morning, under the shining sun and a clear sky. The fresh snow of the evening before made the going unpleasant in the timber. In spite of the wonderful scenery, the trail did seem to stretch, and about noon Ranger Leonard remarked that a woman's name certainly was an appropriate one for the mountain. Being both dull and inquisitive, I asked why, and he replied that it was "D—deceiving."

After a lunch of chocolate and raisins, things didn't seem so stretchy, and we soon reached the edge of timberline. The shadows in the heavy timber were very wonderful and the green of the needles added color to the scene, but the most remarkably beautiful of all, in every detail, were the snow-incrusted trees in the very last strip of timber.

But all things must have an end, and at 2 o'clock we reached our goal—the top of Little Agnes Mountain. The wonders of the Rockies in their winter cloak lay at our feet on all sides, but a stiff wind was blowing and its cool tune soon whistled away our desire to gaze at the scenery; so, after taking some pictures, we removed the rough locks from our skis and started the long slide for home. The snow was just right for good sliding, and we slipped down the mountain at a fair rate of speed, with no thought of traffic cops to worry us, pausing only long enough to take a few pictures.

Reaching the station about dusk, after a wonderful ski ride, we were mighty glad to find old Pat, the trapper, had come down from his camp in Diamond Park and had a piping hot supper waiting for us.



Above—A REAL "OLD TIMER" AT TIMBER-LINE IN HIS WINTER COAT OF ERMINE

Below—THE TRAIL IN THE TIMBER WAS COVERED WITH BEAUTIFUL SHADOW LACEWORK



[Continued on page 113]



EDITORIAL

*"A Town Without Trees Is Cheerless,
A Country Without Trees Is Hopeless."*



The Boy Scouts as Forest Builders

THIS month—February 8 to 14—the Boy Scouts of America will celebrate their fourteenth anniversary. During these fourteen years this organization has made America infinitely better. It has fired the boy life of the nation with a spirit of unselfish service and a love for the body-building, wooded, out-of-doors. It has crystallized a moral code for boyhood that makes for manhood of the highest type. Over 600,000 boys and men are today enrolled under its banner, and the results of its varied activities, covering a period as brief as fourteen years, are already taking definite form on the curtain of a bigger and better America.

We believe that one of the greatest services being rendered by the Boy Scout organization comes through its cardinal principle of getting the boys out in the open, and of giving them the clean adventures offered only by the forest and the woodlands. That in itself is a contribution to the cause of forest conservation which mere words are too feeble to appraise. There was a time when the forests made enemies of men, because they overshadowed and thwarted them; but that was long ago. Today, if one will but seek it out in its more restricted haunts, the forest makes friends, and with none more readily than with our boys, whose longing for them is a priceless inheritance from forest-blooded forefathers.

Given the opportunity to get into the woods, the Boy Scout revels in the absorbing game of woodcraft, which breeds self-reliance and originality. He learns to know the woods and to call the trees by name. His body and mind are freed to the broadening influences of Nature. The forest takes on a new meaning to him. It ceases to be merely a dreamland of adventure. It takes shape as something essential, not only to his boyhood, but to his manhood and to his country. It becomes to him the Great Shop, where materials for a better life and a better nation are made. A forest tree becomes more than just a tree to him—a cheap, inanimate shaft of wood upon which to try his skill as an ax-man. He comes to view it as material for his home, his books, and the hundreds

of other things which he touches and uses every day; as the protective agent of water and land and industry; as the life-perpetuating refuge of birds and wild animals; as the friendly guardian of wild flowers; as the heart of America's out-of-doors.

Fired by this knowledge and by the sight of forest devastation on every hand, is it any wonder that the Boy Scouts of America have enlisted for active service in the rebuilding of the nation's forests. Throughout the country they are planting trees—five thousand here, ten thousand there—and every year the number increases. Little forests planted by the hands of Boy Scouts are beginning to dot many a barren landscape in almost every state. Little forests? In terms of area covered, yes; but in terms of educational value, they are mighty forests. Through his enlightening contact with the forest, the Boy Scout becomes imbued with a forest-sense, which too often his parents do not possess, but which in his youthful enthusiasm he carries to them. His knowledge and his work is infectious.

More than this, the Boy Scouts are answering the calls to fight forest fires and other enemies of the forest. They are being taught to build fire lines and protective roads and trails, to thin and care for degenerating forests, to survey and cruise timber—in short, to become forester-citizens. Their woods training of a few years is beginning to bear rich fruit. Their slogans, "Be Prepared," "Do a Good Turn Daily," have been translated into the forest lexicon. Their zealous, appealing efforts to rebuild the forests which their fathers have destroyed ought to be an object-lesson to the men who sit in legislative halls and fiddle with political bows while the forests of the boys and men of tomorrow burn and dwindle. Surely, these men cannot long continue to say, "Let the boys do it."

The Boy Scout movement is the greatest popular school of forestry in the land. We believe that it is one of the most potential influences in America today working for the reconstruction of our forests.

A Board's a Board for a' That

WHAT should constitute an inch board is not a question calculated to excite the great American public. Nevertheless, that issue has rocked the lumber industry of the United States from coast to coast for more than a year. The particular disturbing factor in the sea of tur-

moil has been a seemingly inconsequential 1/32 inch of wood. Happily, the mooted question has been settled. It was done at a conference held in Washington on December 12th and 13th, at which all delegates from the industry had their hats in the ring, and ended by compromising

on a "standard-bearer" which it is hoped will hereafter put to shame all other board candidates for high places in America's lumber markets.

Whether it knows it or not, the public had much at stake in this conference, and the action taken by the industry stands as a distinct accomplishment in public service. Its action ought to go far in protecting lumber consumers against a multiplicity of sizes in lumber now marketed as inch boards and as 2" x 4" dimension. This class of lumber is used largely in building homes, and it is the home-builder who bears the brunt when his lumber proves to have been manufactured to a size too weak to serve his purpose. The lumber industry also suffers, because such sales give lumber a bad name.

Consequently, a year or more ago the lumbermen, taking up lumber standardization, to which the United States Forest Service had already devoted some study, set out to determine what ought to be the proper thickness of dressed boards and dimension manufactured from soft wood. Committees were appointed. The Forest Service and the Department of Commerce were included and the campaign began. One group of lumbermen demanded this size, another that size, etc. But the main division

eventually came on the question, "Should the so-called inch board, which hasn't been an inch thick for almost a generation, be 25/32" or 26/32" in thickness?" The retail lumberman said it must be the latter. The opinion of the manufacturing lumberman was that it should be the former. Then it was suggested that, if the standard adopted was to best serve the public, the question was obviously one to be decided by an authority, and the best authority was the public's agent, the Forest Products Laboratory at Madison, Wisconsin. The Laboratory was therefore put upon the stand, and its testimony was to the effect that while a thickness of 26/32" is preferred, it considered the adoption of 25/32" a distinct forward step in bringing order out of the present chaos of lumber sizes. The final result was a unanimous compromise to set up a standard of 25/32" for standard boards, with 26/32" as extra standard; and a standard of 1 5/8" for dimension, with 1 3/4" for extra standard dimension.

Although a board is still a board, regardless of size, the public's best interest is to be found in these standards, and it is now up to the lumber consumers to familiarize themselves with them, and thus to protect themselves by demanding these standards.

The McNary Bill

SENATOR CHARLES L. McNARY, Chairman of the Select Senate Committee on Reforestation, introduced in the Senate of the United States on December 15th a bill "to provide for the protection of forest lands, for the reforestation of denuded areas, for the extension of National Forests, and for other purposes, in order to promote the continuous production of timber on lands chiefly suitable therefor."

This bill is of special interest. It has been looked forward to as a tangible expression of the action which the Select Committee on Reforestation, after its extended public hearings and study, would recommend as the charter for a National Forest policy. Introduced before the Senate Committee made its report, it is not clear that the bill represents the full scope or the final form of the legislation which the committee will recommend to the Congress. It has been reported that the committee may submit another bill later in the present session.

Senator McNary's bill contains nine sections. Sections 1 and 2 authorize the Secretary of Agriculture to recommend for each forest region systems of forest-fire prevention and suppression, and to co-operate with the states in the protection of timber- and forest-producing lands from fire, provided the suppression practices of the state meet with his approval. The amount which may be expended by the Federal Government for fire protection in any state is limited to a sum not exceeding that expended by the state for the same purpose during the same fiscal year. Section 3 authorizes the Secretary of Agriculture to study the effects of tax laws and to devise new tax laws designed to encourage the conservation of timber,

and to promote practical methods of insuring standing timber from fire loss. It provides a federal appropriation of \$2,500,000 to enable the Secretary to carry out the provision of sections 1, 2, and 3.

Section 4 provides an appropriation of \$100,000 to enable the Secretary of Agriculture to co-operate with various states in the procurement, production, and distribution of forest-tree seeds and plants, but limits the expenditure of federal funds to a sum not in excess of the sum expended by the state for the same purpose. On the same basis of expenditure, section 5 provides \$100,000 for the Secretary of Agriculture to assist the owners of farm or lands suitable for timber production in the growing and renewing of timber crops. Section 6 would make it possible to acquire under the Weeks Law, for the production of timber, deforested, cut-over, or denuded lands within the watersheds of navigable streams.

Section 7 clears the way for the United States to accept gifts of forest lands, and provides that such lands, after acceptance, shall become National Forest lands. It further provides that the sale of timber from these lands shall favor citizens engaged in agriculture in the state in which such National Forest is located. By section 8 the President would be empowered to add public lands chiefly valuable for stream-flow protection or for timber production to existing National Forests, and under section 9 he would have authority to establish as National Forests lands within the boundaries of government reservations other than national parks, national monuments, and Indian reservations. No appropriations are provided for sections 6, 7, 8, or 9.

While this bill contains some very constructive forest legislation, it falls short of meeting the forest situation now confronting the nation. Probably it is not intended to meet it fully. We hope it does not represent the limit of immediate action which the Senate committee will recommend, because the bill as presented, while it opens the legislative way to action in several important directions, does not provide the means to act in the large way demanded by the urgency of the situation.

For example, the bill fails to provide for forest research or for research in forest products. It does not provide a dollar for the purchase of federal forest lands, nor does it provide an increase for planting on the National Forests. The framers of the bill apparently omitted appropriations for these needed lines of work, on the ground that legislation is already in effect which gives Congress authority to make appropriations. We believe there is danger in proceeding on that basis. It is difficult for Congress to distinguish between a lot of different bills pertaining to forestry. If we rely upon several different legislative acts for appropriations adequate to the task as a whole, political pressure is sure to thwart progress along one or more important lines, thus confusing the problem and throwing the program of forest reconstruction out of balance.

The resolution creating the Senate committee directed the committee "to investigate problems relating to reforestation with a view of establishing a comprehensive national policy for lands chiefly suitable for timber production, in order to insure a perpetual supply of timber for the use and necessities of the citizens of the United States."

Senator McNary's bill can hardly be said to establish a *comprehensive* National Forest policy. If this bill is the sum total of new forest legislation enacted by the present Congress, the Federal Government will have a little more money for forest-fire protection, but our National Forest policy will still remain unsettled. What is needed and what is widely hoped for is a bill which will set in motion—*immediately by adequate appropriations* a forest program comprehensive in scope and wisely provisioned for a period of not less than ten years in advance. Such a bill should authorize the expenditure of at least ten million dollars annually for the acquisition of National Forest lands, one million dollars for fire protection, an equal amount for research, half a million dollars each for forest planting and forest extension, and comparable sums for other relief activities. The problem confronting us is to protect the American people against a forthcoming shortage of forests and to insure them a perpetual supply of timber. Laws alone will not do it.

State Forests as State Investments

BY GIFFORD PINCHOT

Governor of Pennsylvania

IT WAS on June 13, 1898, that the Commonwealth of Pennsylvania bought its first piece of forest land and started the practice of forestry. From then until now the Commonwealth has purchased lands in different parts of the state, until its present holdings amount to 1,077,520 acres. In these twenty-two years the Commonwealth has paid to townships for school and road purposes \$562,419.77 on its forest lands.

Purely as a business investment, the State Forests show up as follows:

Total purchase price.....	\$2,456,300.08
Total amount expended for administration, development, and improvement.....	3,613,211.85
Total expenditure.....	\$6,069,511.93
Present value of forests.....	11,000,000.00
Total investment and expenditures.....	6,069,511.93
Net gain on investment.....	\$4,930,488.07

In other words, the state is about five million dollars better off than if it had never bought and paid for an acre of forest land, and in addition it is growing large amounts of lumber and wood which will be ready for the use of the people just when they will be needing it most.

The town of Zurich, in Switzerland, has for centuries had what amounts to a wood lot of several thousand acres. It has been under careful management since long before

Columbus discovered America. During all that time it has produced crop after crop of valuable timber, the young trees growing up to take the place of the old trees cut down. The point is that the forest is conserved and renewed instead of being destroyed by lumbering.

Not only is it not destroyed, but it becomes steadily more valuable and its products more important every year. It produces annually from every acre a net revenue about three times as large as the amount Pennsylvania has paid per acre for the forest lands it owns; and unless the forest is destroyed by violence or fire, will keep on doing it for centuries to come.

I speak of the City Forest of Zurich from personal knowledge, because I got part of my training in forestry under its maples and ashes, its beeches and spruces, and because I have visited it again and again as one of the most interesting and instructive forests in Europe.

Remarkable as this forest is, it does not stand alone. I know of many towns in Europe whose whole municipal expense before the war was paid from the annual net revenue of their forests; and the beauty of it is that, under wise methods of cutting, the longer these forests are operated, the more timber is cut from them under skillful management, the more timber they produce and the greater is their net return.

Forestry with them means an endless succession of valuable timber crops from the same land.



BEAUTIFULLY ADAPTED TO USE IN A FORMAL GARDEN, *JUNIPERUS SCOPULORUM*, IN ITS CONICAL GOWN OF GRAY GREEN, LOOKS STRANGELY LIKE ITS COUSIN, OUR RED CEDAR OF THE EAST

Homespun Landscapes

A Plea for the Recognition and the Wider Use of Made-in-America Trees in Decorative Planting Around the Home

BY ARTHUR HAWTHORNE CARHART

I. THE NEEDLE TREES

"MY FRIEND," cries the plant juggler, "you have the Royal Siberian jam tree, a most rare and beautiful tree, but you have another joy to experience. Let me show you. This is a picture of an Imperial Hibernian juniper! Such texture, such barbaric coloring, such hardiness! Truly this is a tree in a million. It is the paragon of evergreens for your grounds."

You smile sadly. The Siberian jam tree was a 99 per cent failure, from your viewpoint. This plant-peddler had sold it to you with wordy extolling of its merits. And you slowly awoke to the fact that he had sold you a third-rate tree for a triple first-class price.

You have learned your lesson and the beguiling words of the irresponsible tree peddler no longer beguile.

Why do so many people in the United States succumb to the glib tongues of peddlers claiming to sell rare, imported conifers? With all our rich native conifers

flora to choose from, why should Americans go far afield for evergreen effects in the landscape?

True, we want the Scotch pine, the Austrian pine, and the European larch, but they are almost naturalized citizens.

We think of them as real Americans.

But beyond this limited group, which we are ready—nay, anxious—to use when occasion demands, there are few importations which can equal our native needle trees.

For those who are willing to brave the hazard of having a good tree friend killed by a little rust devil, there is no more beautiful conifer in a home grounds, parks, or institutional landscapes than our own white pine. There are two pines of the west, of the white pine group, which de-



JUST AS DELIGHTFULLY, THE SAME TREE LENDS ITSELF PERFECTLY TO MORE INTIMATE GARDEN TREATMENT

serve more consideration as landscape trees than they have had. They are the limber pine and the fox-tail pine. The smooth, silvery-toned bark, the fine needles in clumps of five or more, and interesting habits of

growth recommend them to any one seeking distinctive pine trees. They are more open than the eastern white pine and the effect is more picturesque. They have just a suggestion of the Japanese conifer type in their slightly grotesque growth. They should grow well in our most northern states, for they will stand the most severe cold.

The Norway pine of the north woods is an American, in spite of its foreign-sounding name. Perhaps this giant of the forest reaches its most pleasing development when lifting its tall top over some islet of our northern lakes. The straight columnar stems of deep orange yellow make a most interesting color spot in the landscape of forest greens and lake-land blues. It might be very well suited for larger park planting and estate groups, or it would serve as the one big conifer on a smaller place.

There are a number of other pines which should be included in any discussion of our native conifers suited to landscape planting. The Western yellow pine has its place, as has also the yellow pine of the South. The jack-pine of the North and East is a rustic resident of the woods and makes excellent masses in broader compositions in man-made landscape. The lodge-pole pine of the West is an equally interesting tree of similar habit.

The low-headed, rambling piñon pine of the Southwest is worth a trial in any section. It should grow to the eastward in very dry situations. The nutlike seed is the piñon nut of commerce. It is of special value where a rambling low tree of very dark hue is needed for a dry situation. It is suited for use on home grounds as a specimen tree or in a small group that is not formal. It usually does not grow over twenty feet in height.

Along with the Norway pine grows the balsam fir. The feathery foliage on the long, springy branchlets has earned for it the nickname of the "forest goose." Many

a forest traveler has welcomed a spicy bed on balsam boughs at the end of a day's hard travel. In the landscape, also, this feathery character is one of its finest characteristics. It may be planted close to a house or drive, as specimen groups or in masses. One may be sure that this fine-textured foliage and branch habit will blend with the finer foliage of refined shrub or tree groups.

In the West, the Douglas fir has some of the same general characteristics. This tree is recommended for

trial in the landscape anywhere it will grow. It is clean, fine-textured, suited to almost any location where such a tree is needed, and often has a silvery tone which is most attractive. The cones are curiously decorated with bracts.

What a lovely tree is the Virginia cedar. Like ranks of dark sentinels, they stand when the dusky twilight shadows steal over the fields of their native state. Massive, dark, substantial full of character, these accents in the landscape are among our finest evergreen tree effects. I never recall the Virginia or red cedar without remembering how they line the fences of Maryland and lift their solid, stately columns against soft-tinted evening skies.

Unfortunately, in some climates it is almost impossible to allow the red cedar and apple tree to live together. The slimy, sprawling cedar-apple

fungus makes the cedar unsightly, while the bright orange spots which mark its presence on the apple trees make the leaves ugly and often do considerable injury. Of all apple trees which this disease attacks, I have found the flowering crab the most susceptible. An experience in the mid-west shows that it will attack even small, tender twigs and, by practically girdling them, stunt the growth of the tree. But this disease is dependent on having both apple trees and the red cedar present,



OUR NORWAY PINE IN ITS NATIVE HAUNTS. A GOOD TREE CITIZEN, THAT WILL SMILE AT OUR STORMS AND WELCOME OUR SUNNY DAYS

and if either is lacking it will not flourish. Other cedars are either not susceptible to the disease or are practically immune.

One of the most useful of all the evergreens in landscape plantings is another cedar. Its full name is *Juniperus scopulorum*. Its native habitat is the dry hillsides of the West, where it reproduces in miniature some of the forms of the red cedar of the East.

The head of this juniper is close, it grows slowly, and often is of a tone which is the coolest of gray greens. Its conical shape makes it a valuable small evergreen for formal plantings, and its slow growth insures its continued usefulness in such situations over a period of years. It is offered in a very few western nurseries, and therefore is not as generally used as it should be. It is an excellent conical evergreen tree wherever it will grow.

There is a close relative of the balsam that is of considerable worth. It is the concolor fir. This tree is generally offered by the better nurseries and can be recommended as one of our best natives. The long, fat needles, which look like a large edition of the balsam needle, are of a distinctive grayish blue-green, and in the landscape in masses this tree will give an effect similar to that attained by the Colorado blue spruce.

One hesitates to start discussing the spruces. There



IF ONE CRAVES THE UNUSUAL IN HIS HOME LANDSCAPE, WHY OVERLOOK OUR NATIVE LIMBER PINE, WHICH OFFERS SUCH FANTASTIC, JAPANESE EFFECTS?



CONCOLOR FIR—GLORIOUS, HOME-BRED EVERGREEN TREES OF INSPIRING HEIGHT THAT HARBOUR THE WIND SONG IN THEIR NEEDLES AND OFFER COOLING SHADE IN SUMMER'S HEAT

are a number of natives which are of excellent value. Individual needs or preferences will dictate which should be used. The Colorado blue spruce is the most brilliantly colored of all of our conifers, reaching a tone which is almost true silver. Its chief value, besides serving as a specimen tree, is to give color accents in the year-around landscape. In combination with other darker-toned spruces or as a group in larger park-like vistas, the blue spruce produces a striking, delightful contrast that at once attracts and pleases the eye.

Engelmann's spruce is a western tree of darker color, which may be grown in our Northern States and in the States of the West. It is stately and sturdy. The Black Hills spruce will thrive in the Lake States, and it is one of our better native spruce trees. The white spruce of the East and the black spruce are also good members of the group. A spruce group on larger areas or a single specimen in a home grounds offers a distinctive form that is not attained by any other native evergreen. The spiry-topped spruces of our native woods are unexcelled for the particular place for which they are fitted.

Two little-used native conifers are the hemlock and the larch. Both are suited to damp situations. The first is evergreen and the latter is a deciduous conifer of slightly habit and texture. One must really concede, in the case of the larch, that the European variety is at least as good as the North American native.

Many of our good native conifers are sold by nurseries. There are still a few, such as *Juniperus scopulorum*, which should be thoroughly tried. Where it is possible to use this juniper, it should be introduced to every one seeking a small, conical, close-headed evergreen. The western yellow pine, the limber pine, and some of our little-known firs are as meritorious.

A stately procession of native conifers has passed in brief review before our mind's eye. Old acquaintances have come to nod in a friendly way and some new friends have crept into the picture. Where in the world could one find better coniferous trees for landscape plantings than right here in our own country? The seven seas could not bring more apt forms; could never produce such hardiness for our own native heath.

"The Imperial Hibernian juniper is most rare. It has fantastic spiny leaves, while the fruits resemble a tiny coronet in shape and are of a brilliant red purple in the fall. You should have one in your yard, as a companion to that distinctive and unusual Royal Siberian jam tree," says the tree peddler.



THIS GROUP OF ORNAMENTAL EVERGREENS SHOWS THE BEAUTY OF VARYING COLOR AND FORM AVAILABLE IN OUR NATIVE CONIFERS



SPIRY-TOPPED SPRUCES IN THE TABERNACLE OF ALL OUTDOORS—DISTINCTIVE TREES FOR THE HOME GROUNDS AND GENERAL FAVORITES AMONG OUR NATIVE EVERGREENS

You look this man in the eye. Most of his selling talk is based on the rare and unusual, not on the fit and hardy. He sells freaks, and the trees you really are looking for are good tree citizens, that will smile at our storms and welcome our sunny days.

Sternly you say: "If you have some right good Colorado blue spruce, or a Virginia cedar, or perhaps some good specimens of the native Douglas fir, I would buy some of them, but I'm not in the market for any imported, highly colored, grotesque trees of the Royal or Imperial class. I want some real American evergreens for my place."

For into your mind has come a permanent picture of stately native pines, spruces, firs, and junipers—glorious trees that reach towards God's heaven, their tops resembling the steeples of places of worship. You hear the wind song in their needles and see their feathery branches sway and wave, as the breeze sprites rustle through them. You think of the cool, copious shade they cast under summer suns. And then you sit down and give your old reliable nursery man, who has a good stock of native pines, spruces, hemlock, firs, and junipers, a whopping order for home-bred evergreens, which makes his heart glad and justifies his faith in "made-in-America trees."



Courtesy U. S. Forest Service

BUFFALO IN THE COMANCHE COUNTRY

Kiowa Indians reviving old memories. The race of buffalo, which so nearly approached extinction, is coming back, but only through the most rigid protection and care.

Wild Life—A Capital Account

After a Century of Wasteful Killing, Our Motives in Wild-Life Conservation Are More and More Rightfully Commanding Economic Recognition

BY GEORGE BIRD GRINNELL

AMERICANS have been and still are notoriously thoughtless, wasteful, and shortsighted in the treatment of natural resources. We kill our game and our fish by the wholesale, without thinking that enough should be left to reproduce the species. We turn our waste into the streams without thought of the fish inhabiting them, or of the people lower down who may need to use the water. We cut down and burn up our forests and waste our coal without at all considering those who are to come after us. Each individual engages in a struggle to get for himself the most that he can of any desirable thing, and to crowd all others away from any share in it. We are more selfish in these matters than seems quite decent. This attitude is in part an inheritance from pioneer times, when the struggle for subsistence was severe and the great abundance of natural products encouraged waste.

To turn the natural products of the land into things that may be sold and used up, causes their destruction and puts an end to them. Such complete destruction is an economic blunder. We ought to possess the vision to comprehend that, if protected and preserved, they will last indefinitely, and that for the future we may have

perpetual use of the income they produce. Instead of this, we wish to consume the principal.

The great public is the ultimate consumer of all of these desirable things, and, as they become more difficult to obtain, it pays for them constantly increasing prices; yet it feels no very intelligent interest in the matter. It grumbles at the mounting prices, but does not know, and perhaps does not care, what makes them mount. It grumbles vaguely and then forgets.

Efforts to protect wild life were initiated many years ago by sportsmen, who then feared that a time would come when all the game would be destroyed and there would then be no shooting left for them. These sportsmen urged, as one of their chief arguments, that by preserving game and fish and encouraging its pursuit the public's health was benefited, declaring that the exercise put forth in this pursuit and the alertness required in observing, following, and capturing these wild animals made men better, both physically and mentally. This was all true enough, but only appealed to a limited public. No doubt it had some influence.

The viewpoint has broadened now; very gradually we have come to understand that all these wild things are



Photograph by Gabriel Moulin

THE LEOPARD SEAL, AT HOME ON THE KELP-COVERED ROCKS OF THE CALIFORNIA COAST

At Cypress Point, between Pacific Grove and Carmel-by-the-Sea, on Monterey Bay, there is a considerable rookery of this curious and interesting hair seal, a species which should be protected. The illustration shows the group in the Museum of the California Academy of Sciences.

valuable assets of the nation and of the state; that they constitute a capital which, properly managed, will yield a handsome and continuing income. Their existence contributes to the public pleasure and health and their conservation produces wealth.

Many men and groups of men still strive to secure for their own purposes as large a share as they can of the natural things about them, but the public at large has now come to feel that, for the greatest good to the greatest number, these things must be protected from undue destruction and must be used intelligently.

One of the early arguments to show that such preservation was profitable from the money point of view was suggested about 1880, by an author very familiar with the Maine woods, when he urged as a reason for protecting Maine game that each summer and autumn this game attracted from without the state a considerable number of anglers and hunters, who came for the fishing and the hunting and spent in the state large sums of money which otherwise would not be received by its communities. This direct appeal to the thrift of the State of Maine was not without its effect, and actually caused a considerable improvement in game regulations and their enforcement; so that for some years thereafter the State of Maine was regarded as having the best game laws of any State in the Union.

During the early years of work to protect wild life, not a few men also were working in behalf of forest protection. Many of these viewed the subject solely from the economic standpoint, desiring to have the forests so preserved and used that they would reproduce themselves: that the sources of water should be protected, and,

generally, that these great assets should be used for the good of the public at large—to produce income rather than to be destroyed at once.

Those interested in wild-life protection appreciated and supported this view, but were influenced by the further fact that the forests are the home of many forms of wild life. To them this was an additional reason for protecting the forests.

Many of these men had seen forest fires sweeping over the country, in the Rocky Mountains and in the Sierra Nevadas, and knew something of the destruction of wild life, as well as of timber, caused by such forest fires. One of the most active and efficient men in securing the passage of the Act of March 3, 1891, was the late William Hallett Phillips. Under that act the first of the forest reserves, which now cover such a vast area and are of such enormous value, was set aside by General John W. Noble, Secretary of the Interior under President Harrison. The establishment of these forest reserves was an important aid to wild-life preservation and its influence has been widely felt. We may believe that the time will come when the proposition first suggested by the Boone and Crockett Club more than thirty years ago—that game refuges be established in the various forest reservations—will receive approval by Congress.

On the other hand, a few of the states, notably New Mexico, have set aside refuges where game is protected, and the result of this action will become apparent before long.

The motives that have influenced game protection have been different at different times. At first these motives were almost purely selfish; at a later date they became

sentimental; now the pendulum has swung back again and they are economic, and on this basis are likely to be lasting.

The passage by Congress of the migratory bird law has already resulted in a great apparent increase in the numbers of our insectivorous birds and of wild fowl and a like increase, though not so well marked, in the numbers of certain forms of shore birds. This regulation put an end to the shooting of fowl in the spring and to the very destructive killing for market. It is a long time since wild fowl have been so abundant as within the last two or three years.

The wild life—certainly the fur and the wild game of any state—has a value that is worth considering. The reports of the last two or three years show that nearly two million wild ducks were killed annually in Minnesota. Certain states have estimated the money value of the game killed within their borders, and these estimates as given by Dr. E. W. Nelson, of the Biological Survey, are very high. He names eight states—Idaho, Michigan, Minnesota, New York, Oregon, Pennsylvania, Vermont, and Wisconsin—which yield a total value of \$25,746,916. This is about 6 per cent on a capital of \$430,000,000, which is certainly something worth thinking about.

A remarkable record of money thrown away through the greed of individuals is seen in the history of the fur-seal fisheries, which came into possession of the United States in 1867. At the time Russia sold Alaska to the United States there were estimated to be several million seals in this herd. For some little time after the sale there was some seal stealing, but even after the United States leased the seal fisheries, in 1870, there were estimated to be 2,000,000 seals on the islands. Some years after that began pelagic sealing, in which great numbers of seals were destroyed, and many of these were females which had young pups on the shore, and these pups, when they lost their mothers, inevitably starved to death.

In 1909 the Commissioner of Fisheries made the following statement:

"The Alaskan fur seals constitute the most valuable fishery resources that any government in the world ever possessed. It is little less than a national disgrace that the herd of 4,000,000 to 6,000,000 seals which came into our possession when Alaska was acquired from Russia, and has been under our charge ever since, should have been allowed to dwindle until today it numbers less than 150,000 of all ages. The mildest way in which to characterize the dissipation of this great resource of



Photograph by Gabriel Moulin

THE CALIFORNIA SEA LION

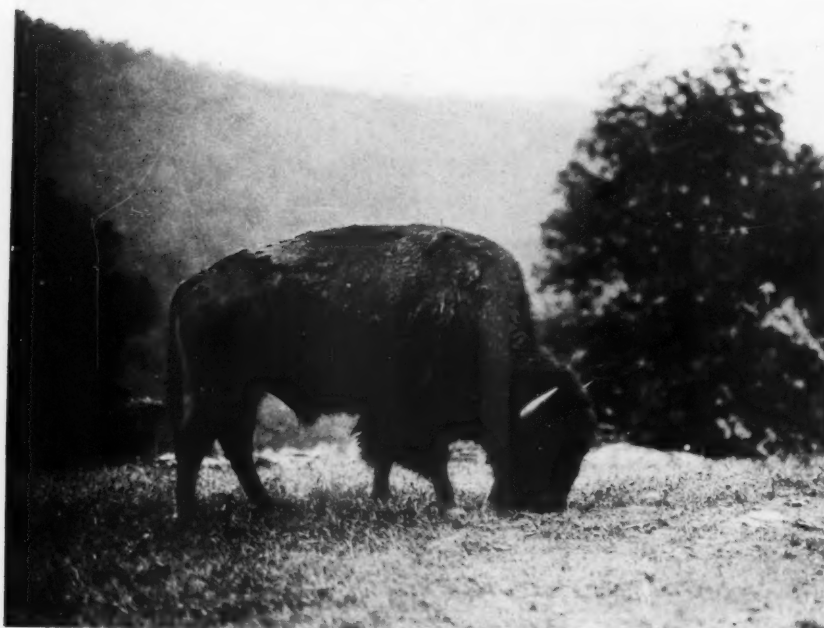
Common now along the coast from San Francisco southward, in the early days these sea lions were killed in great numbers for their hides and oil. They are very intelligent animals and the kind usually seen in zoological parks and elsewhere in captivity.

This is the group in the Museum of the California Academy of Sciences.

wealth of our people and of revenue to our government is that it is a serious indictment to our business capacity."

In the forty years that elapsed between 1870 and 1910 these 2,000,000 animals had decreased to a little over 130,000. It was in 1911 that the convention between the United States, Great Britain, Japan, and Russia was signed, and the seal herd passed under the direction of the Department of Commerce. Since then the herd has increased to more than half a million individuals, with an estimated annual production of more than a million and a half dollars.

The game, fur, and wild life generally are of great importance also to our commerce and manufactures, for the large and ever-increasing number of men who pursue these wild birds and animals require mechanical aids in this pursuit. They need fishing rods, guns, traps, shot, boats, and clothing; they need transportation from place to place, and in many cases the services of people who assist them in their recreation. How important all this is and how great the capital it represents may readily be inferred from a study, at certain seasons of the year, of the advertisements of transportation lines, and, at all seasons of the year, of the advertisements of gun-makers, rod-makers, clothing-makers, and a multitude of other manufacturing and commercial firms, a great part of whose business depends on the patronage of men interested in wild life. Solely from this money aspect, it is thus a matter of importance to preserve and, so far as may be, to increase the wild life that still remains to us.

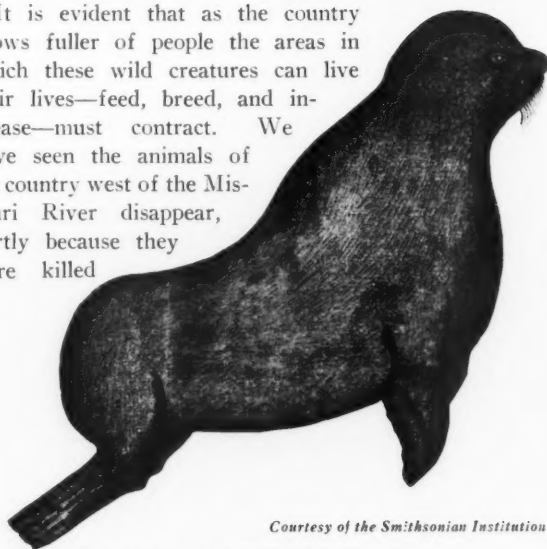


Courtesy U. S. Forest Service

A KING OF BEASTS

Though he may never again roam the plains with the wild freedom of old, his number is coming to be legion, for there are now over twelve thousand buffalo under fence in North America.

It is evident that as the country grows fuller of people the areas in which these wild creatures can live their lives—feed, breed, and increase—must contract. We have seen the animals of the country west of the Missouri River disappear, partly because they were killed



Courtesy of the Smithsonian Institution

THE GREAT NORTHERN RHYTINA, OR SEA COW

This great mammal strikingly exemplifies extermination through ruthless pursuit and reckless killing. First seen in 1741 on Commander Island, off the coast of Kamchatka, the last specimen was seen in 1768—complete extermination in the short span of twenty-seven years.

off by hunters, but chiefly because the farmers have moved into the ranges which they used to occupy and have expelled the wild things that it once supported. Nevertheless, there are now and long will be many regions where refuges of moderate size can be established, in which wild birds and animals shall be free from molestation, where they may increase in numbers, and from which they will pass out to stock adjacent territory.

Other forms of wild life, which live in the sea, are being exterminated by commercialism, just as were the buffalo. Their products—fur, flesh, oil or what-not—are salable at such prices that it is worth while to pursue them to secure these products for sale, and they are hunted and killed until they become so scarce that it is no longer profitable to fit out ships or expeditions to kill them. To many it makes little apparent difference whether the mammals which occupy the sea are destroyed or not. Some of them have already become extinct, while others are approaching extinction, which will be a loss to the world.

In the eighteenth century, when Bering led his expedition through eastern Asia and across the sea

UTAH'S GIANT FIR

By WALTER P. COTTAM

THIS tree is a white fir (*Abies concolor*) and is one of the largest, if not the largest, tree of its kind. Considering its position here at Timpanogos Mountain, Utah, in the very heart of the Rockies, its size is very extraordinary and most unusual.

The eminent dendrologist Sudworth, in his "Forest Trees of the Pacific Slope," page 116, has this to say about the white fir in general: "It grows to its largest size in the Pacific region, where it is frequently from 140 to 180 feet and, occasionally, over 200 feet high, with a diameter of from 40 to 60 inches, rare trees being from 5 to 6 feet through. In its Rocky Mountain range it is much smaller, from 80 to 100 feet high, or rarely more, and from 20 to 30 inches in diameter."

This white fir reaches a height of 110 feet. It is 20 feet in circumference at the base and 17 feet 8 inches at breast height. It presents a mighty spectacle as it stands, broken with age, to greet the morning sun, as it has done for more than five centuries. The exact age of the tree is as yet undetermined, but one of its children, which was removed that man might better view the rugged old sire, gave a ring count of 102 years with a diameter of only 16 inches.

There is a touch of pathos to this venerable old tree. One wonders how long it has stood there, deprived of the association of the companions of its youth, whose fallen and hollow trunks give mute evidence of a race of giant firs that has now but a single representative. I think it is the old chief of this forest that still remains because it has proved itself the greatest fighter.

And what ugly scars does this old giant exhibit as still undaunted he proudly battles on with a thousand adversaries. The huge scar on his ankle tells of a fire that one day fought fiercely but not conqueringly. The bald and shattered crown is the record left by one or many bolts of lightning that struck hard, but not hard enough to kill. The dry, brittle branches, which stick out like drawn swords from his massive sides, speak possibly of the battles with the deadly boring beetles and the friendly aid rendered by the woodpeckers and sapsuckers that still diligently and

methodically scour his trunk and branches for the foe that may be lurking there. I listen and I hear this aged old warrior assert over and over again, in the language of the trees, this firm resolution: "My adversaries, if they be strong, may shatter my crown or break my arms, but



never shall they bend my upright position while life lasts."

When the great ecologist, Dr. Henry C. Cowles, for the first time beheld this king of the forest, last July, with head bared and a voice that clearly portrayed his emotions, he pronounced him the most magnificent fir in all the world.

Berks Tree Planters Transform the Landscape



THE BAND OF HIGH-SCHOOL GIRLS AT WORK IN 1915, PLANTING TREES ON THE ANTIETAM WATERSHED

IN THE last few years many thousands of trees have been planted in Berks County through the efforts of public-spirited people, and the general interest inaugurated in this way has crystallized in the practical accomplishment shown there today. Special effort has been consistently directed to enlist the young people in this work, and documentary evidence of the fact that youngsters can plant and grow forests is offered in the illustrations. The thrifty young growth shown in the second picture is the result of the planting, by Reading High School girls in 1915, on Lake Antietam Watershed, of seedlings only six inches high.

"Plant a Million Trees" and "Plant Trees on Idle Lands" are the slogans adopted by the Berks County Conservation Association in the enthusiastic campaign now under way for the celebration in the spring of the fifth, or wooden, anniversary of the organization of this association, which has already done so much for forestry in Pennsylvania. And, under the energetic leadership of Solan L. Parkes, who outlined the planting campaign and has it in charge, there is every reason to believe that the goal will be reached.

The Pennsylvania Department of Forests and Waters and the United States Forest Service have offered every assistance to the local association, the state placing the million trees at the disposal of the Berks conservationists to be planted on idle lands in the county, and the Forest Service sending, for exhibition purposes, an impressive setting, the model weighing over five hundred pounds, representing accurately the effect on a locality of having forest-covered hills and mountains as contrasted with the desolation resulting in a similar area where the forests have been destroyed.

The public interest in the proposition is indicated by the fact that already 62 citizens have pledged themselves to plant upward of 300,000 trees. One hundred stations will be established throughout the city and county where blanks and information can be obtained. Banks, stores, and other business houses are co-operating in the movement to open a station in every town and village in the county.

That the high hopes of the campaign managers are well founded is indicated by their recent accomplishment in the organization of the Volunteer Forest Patrol, dedicated to the prevention of forest fires and the conservation of wild plant, bird, and animal life. Broadcasting an appeal for enlistment a few short weeks ago, the Berks County

[Continued on page 113]



AND A PICTURE TODAY, SHOWING THE RESULT OF THE PLANTING DONE BY THE YOUNG PEOPLE IN 1915—INDISPUTABLE EVIDENCE THAT BOYS AND GIRLS CAN PLANT AND GROW FORESTS



The Ranger's Visit

By CHARLES H. SHINN

RIDING the stock ranges of the California Sierras, the young forest ranger chanced across one of the last of those half-forgotten shake-makers who live up among the pines—a fine old pioneer, who made a little money every summer by riving out a few shakes for cabin dwellers. Old friends, these two sat down together for the noon hour, after having started a fire, made coffee, fried bacon, and brought out the hard-tack. The shake-maker had a rude lean-to shed against a rock, which he called his cabin. It contained an apology for a stove and another apology for a table; but everything was as neat as a pin and as clean as a wind-swept, snow-polished piece of granite.

"How well you hold out, Ashley," said the ranger. "I've known you ten years, and you are as spry as ever."

"I'm over seventy," the pioneer answered, "and sure I ain't on the shelf yet. But I find that I have to be careful. Tell you what, young man, we all of us come up against it. I've worked like a nailer all my life, and yet I've only saved a few dollars for the funeral expenses. But why is it that everybody can't die young, and just leap into the hereafter with a shout, instead of so often waiting till we're worn out and no more good to anybody—only an everlasting nuisance, in fact?"

The forest ranger hesitated at these words, for he saw that it was a genuine burst of feeling, that the pioneer was lonely and tired. There might be a lot behind it. Ashley always meant a great deal more than he ever said.

"Well, now, Ashley," he answered at last, "you're all off on that last. The longer that a good man lives, the more help he is to others; he couldn't ever be a trouble to anybody. Really, I believe that a fellow's best chance for playing the right sort of a game is apt to come at the very last minute."

The pioneer leaned across the rough pine table and looked the forest man in the eyes for almost half a minute. "I believe you mean it," he said at last, in a slow voice, deeper and quieter than the situation seemed to require. "Now go ahead and prove it."

"Prove what?" replied the ranger, quite as slowly, feeling a tension in the air.

"What you have said—that life is worth living for the old, helpless, and poor, or for any one who is past his usefulness."

"That's the point," the ranger answered—"none of us ever get past usefulness."

"Prove it, then."

The young ranger was a college man and widely read. Ashley, the pioneer, was also a reading and thinking man. Many a stout argument they had held together in long evenings by the winter fire. But the ranger suddenly knew with absolute sureness that this went clear down to one of the heart problems of all lonely men, and he searched his inmost soul for the right word.

"Ashley, once I was a newspaper reporter in New York. The thing I am going to tell you happened on the Jersey City side. There was an old, feeble man, supported by his daughter's family. They put him out on the sidewalk in the sun, and the neighbors' children played about him. The old man was over ninety and crippled, but he had the use of one arm. There came a runaway team down the street, smashing everything, and it took to the sidewalk, killing the old man, but not before he had thrust two of the youngest of the children out of the way, saving their lives. I wrote an item about it, went over to the funeral, saw the babies and their mothers. He had been a very plain old fellow, but always cheerful, and he would have been missed, even if he hadn't saved those children at the very last minute of his life. Perhaps the biggest chance he ever had to do something came when he was very old and absolutely dependent on others."

"One chance in ten million," Ashley murmured, almost under his breath.

The ranger went on: "That's no argument—only my illustration. But, you see, this old man gave himself for the next generation. That's the real point. Now, as long as a man lives, clear to the end, he can be giving thought, love, and the glory of a high example of cheerful

courage to those about him. Therefore, he gives himself to the coming generations, even though he cannot lift a hand or speak a word."

"He wears out the lives of others," Ashley answered.

"That cannot possibly happen," the ranger said, "if he grows more dear to them every day."

"Did you ever know any such old fellow of that sort?" Ashley questioned.

"A dozen or more whose last days were their best ones, who ripened and mellowed like winter fruit. They managed to prove to every one about them that life was truly worth while, and that there was a hereafter. They didn't grumble, or lie down, or row about any of the rules of the game."

"Example?" said Ashley.

"Well, my grandfather was that sort. Lost his eyesight and most of his hearing, but grew better to look at every day. We children thought him wonderful; we spent hours with him. He really influenced our lives and kept us up to the mark, because he expected so much of each of us."

Silence fell between the two men, and Ashley sat with knitted brows, thinking deeply. At last he spoke:

"Sum it up. Do you believe that one can fight it out?"

"Of course, I do," the ranger said. "Youth is one sort of an adventure and old age is another sort, but one is just as good as the other."

Ashley still sat thinking, and slowly his forehead cleared. At last he leaned across the table, shook hands with a merry twinkle in his eyes, rose to his feet, reached up and took a small package from behind a box on a shelf. He gave it to the ranger.

"You can look at it if you like. Take it along and toss it into Sand Creek Canyon. Saddle up and hike, but remember that old Ashley stays in the game."

An hour later the ranger, reining his horse on the top of a divide, took out the ounce vial of strychnine Ashley had given him and tossed it down a thousand-foot precipice. "That's over with him for keeps," he thought to himself. "Lucky that I let my plug choose the trails awhile this morning, and that he took me up to Ashley's summer camp."

Newly Elected Officers of the Association

At the annual meeting of The American Forestry Association, held at the Commodore Hotel in New York on January 23, the newly elected officers of the Association were announced as follows:

President

HENRY S. GRAVES, Yale University, New Haven, Connecticut.

Treasurer

GEORGE O. VASS, District of Columbia, Vice-President, Riggs National Bank, Washington, D. C.

Vice-Presidents

W. W. ATTERBURY, Pennsylvania, Vice-President, Pennsylvania Railroad.

CHARLES S. BARRETT, Georgia, President, Farmers Union.

DANIEL C. BEARD, New York, National Scout Commissioner, Boy Scouts of America.

JOHN W. BLODGETT, Michigan, President, National Lumber Mfrs. Association.

GEORGE CORNWALL, Oregon, Publisher, *The Timberman*.

CHARLES DEERING, Illinois, Director, International Harvester Company.

SAMUEL GOMPERS, Washington, D. C., President, American Federation of Labor.

DAVID L. GOODWILLIE, Illinois, Chairman, National Forestry Policy Committee, Chamber of Commerce of the United States.

ANSON C. GOODYEAR, New York, President, Great Southern Lumber Company.

GEORGE BIRD GRINNELL, New York, Author and Explorer.

WILLIAM KENT, California.

MRS. MAUD WOOD PARK, Washington, D. C., President, National League of Women Voters.

GIFFORD PINCHOT, Pennsylvania, Governor of Pennsylvania.

FILIBERT ROTH, MICHIGAN, Former Dean of Forestry, University of Michigan.

HARVEY N. SHEPARD, Massachusetts, President, Massachusetts Forestry Association.

B. H. SNELL, New York, Member of Congress from New York.

HENRY VAN DYKE, New Jersey, Author.

HENRY C. WALLACE, Iowa, Secretary of Agriculture.

JOHN W. WEEKS, Massachusetts, Secretary of War.

WILLIAM ALLEN WHITE, Kansas, Editor and Author.

Mrs. T. G. WINTER, Minnesota, President, General Federation of Women's Clubs.

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JOSEPH HYDE PRATT, North Carolina, North Carolina Geological Survey.

MRS. JOHN D. SHERMAN, Illinois, Chairman, Department of Applied Education, General Federation of Women's Clubs.

HENRY W. SHOEMAKER, Pennsylvania, Member of State Forest Commission.

The tellers appointed by the Committee on Nominations, and consisting of W. T. Andrews, J. Girvin Peters, and J. C. Nellis, also reported that the amendments to the By-laws submitted for referendum were adopted.

The annual meeting was made the occasion of a special forestry dinner at the Commodore Hotel, at which various phases of the present forest situation in the United States were presented by Senator George H. Moses, a member of the Select Senate Committee on Reforestation; Dr. John Finley, of the Editorial Board of the *New York Times*, and Representative John D. Clarke, of New York. Some new motion-picture reels provided by the New York State Conservation Commission and by the United States Forest Service were also presented. These pictures were of an educational character and depicted many interesting activities relating to the forests.

A Forester In Oom Paul's Country

[Continued from page 82]

a semicircle around the horse, seemingly drawing closer. It flashed on my mind that here was a lion maneuvering for a leap. My boasted bravery vanished. All the stories I had heard of man-eating lions flashed across my vision like a runaway cinema. To shoot at that dim object crouching in the dark did not impress me as the proper course to self-preservation. I tested my voice by clearing my throat. What a relief. I shouted with all my quaking might, "A lion! A lion! Quick!"

A deadly silence followed, and I huddled in my saddle, resigned to the worst.

Another black object appeared. Or was it my imagination? My straining eyes relaxed. It was a man, approaching slowly and with rifle leveled for action. I straightened up in my saddle. Together we searched the shadows and, finding nothing, returned to our temporary camp. But that night I told the native boys to make the fires extra big. This was my most intimate experience with a South African lion.

Berks Planters Transform Landscape

[Continued from page 110]

Conservation officers have recently announced an enrollment of 50,000 members of the Volunteer Forest Patrol, placing it in the front rank of all similar organizations throughout the country. This huge membership was largely gained through the efforts of Mr. Parkes who was the originator of the "Patrol" idea. He first enrolled the 20,000 pupils of Berks rural schools—no mean accomplishment in itself, involving the necessity of securing the support and co-operation of the educational forces of the state; then the names of all the members of the Reading Automobile Club, the Rod and Gun Club, and similar organizations were placed on the roster, and at the last meeting of the Reading School Board Mr. Parkes' request that the pupils of all city schools and their teachers, numbering close to 20,000, should also be included, was approved.

Governor Pinchot wrote a cordial letter to Mr. Parkes,

endorsing the patrol and complimenting him upon its remarkable growth, as did George M. Wirt, of the State Department, and Ovid M. Butler, Secretary of the American Forestry Association.

As we go to press, advices are received that Governor Pinchot himself has enrolled, as the 50,001 member of the Voluntary Fire Patrol, and it is now the intention of the directors of the work to offer the whole plan to the state government for incorporation with its work in forest protection, to the end that membership in the Patrol may be opened to all the school children in the state, some 2,000,000 in all, divorcing it from its local origin and making the Patrol a body of much broader scope and statewide function.

Skiing On the Routt

[Continued from page 97]

The next day we went back to Clark, and I took the stage for Steamboat Springs. As the sleigh slipped along over the snow, the picture of those snowy mountains glistening in the sunlight danced before my eyes, and I kept saying to myself, "If people only knew what some of our National Forests look like in winter dress, they

would change the season for 'summer vacations.'" I felt sort of derelict because I could not bring the whole glistening scene down with me and show it off on "Main Street." These pictures are pretty good for an amateur; if I do say it myself, but shucks, you ought to see the real thing.

Letting Him Down Easy

WE'LL wager that no budding Forest Service author was ever treated like this contributor to a Chinese journal:

"We have read your manuscript with infinite delight. Never before have we reveled in such a masterpiece. If we printed it the authorities would ordain us to take it for a model and henceforth print nothing inferior to it. As it would be impossible to find its equal in 10,000 years, we are compelled, though shaken with sorrow, to return your divine manuscript. For so doing we beg one million pardons."—*California District News Letter*.

Treeless Now

THE area where trees once grew in the United States, but where now nothing grows is as large as the States of New York, Pennsylvania, New Jersey, Delaware, and Maryland combined. It is larger than the combined forest lands of Germany, Belgium, Denmark, Holland, France, Switzerland, Spain, and Portugal.

NORTH AMERICA, with one-twelfth of the world's inhabitants, uses close to half of all the timber consumed in the world.

Scouting for Gypsy-Moth Eggs

[Continued from page 91]

to three-quarters of a million dollars has been spent in effecting a large and encouraging reduction. Extermination is in sight. The egg masses are hard to find and \$247 per mass seems like a large sum. Exhibit A, in the shape of enormous injury to forests, is now available for arousing the public to a realization of the danger of allowing the gypsy moth to multiply and spread. However, we do have one example before us, namely, the action of the State of Massachusetts in discontinuing its gypsy-moth

work in 1900, after ten years of effective control work, and starting it again in 1905 because the moth was so abundant and destructive. At the present time Massachusetts is spending money at the rate of \$180,000 per year in fighting the gypsy moth. It is to be hoped that New Jersey will profit by Massachusetts' mistake and continue its successful campaign against one of the most destructive insects ever introduced into the United States.

Wild Life As a Capital Account

[Continued from page 108]

to what is now Alaska, his men suffered greatly for food and subsisted, to a considerable extent, on the fur seals of the Commander Islands and on the great northern Rhytina, or sea cow, which was abundant in the waters near these islands. This slow-moving and entirely defenseless sirenian fell an easy prey to the hungry men, and by them—and by others who came after them and who depended for flesh food almost entirely on the sea cow—was long ago exterminated. Although at present protected in many places, the manatees must in like manner pass along.

The great value of its fur has caused the extermination of the sea otter over much of its old-time range, and it is still uncertain whether the species can be perpetuated, though in one place it is, I believe, effectively protected. The fur seals of the Pribilof Island, with the earless seals and the sea lions, are, perhaps, in no immediate danger. The walruses, however, are being exterminated and probably will have to go. The whales and porpoises may last longer; yet these animals are more or less local in range, and present methods of destruction are very deadly.

It is quite obvious that reasonable control of the taking of these marine mammals would put them on a safe footing, where they could be depended on to yield for all time a considerable income.

When protected from enemies, many wild animals tend

to increase rapidly. We have frequent examples of this in herds of deer and elk in confinement, but perhaps none is so impressive as the increase of buffalo under protection, as exemplified in the great herd in Canada and one or two smaller ones in the United States.

A dozen or more years ago we were told that there were only about a thousand buffalo left in the whole world, but now there are ten or twelve thousand buffalo under fence in North America. These will continue to increase until those who hold them will not know what to do with them. There are some species, it is true, that do not thrive in confinement, no matter how that confinement may be disguised; one of these is the prong-horn antelope, but it may be that as time goes on a means may be found by which even such animals may be protected.

Experience has shown that after any species, through wasteful killing, has been brought down to a point where its numbers are small, the public begins to realize that this destruction was a great mistake, and to insist that efforts be made to restore the species that has almost been exterminated. Often this cannot be done. But, even if it be possible to restore it, this can be accomplished only at great cost; so that the public is obliged to pay heavily for the selfish wastefulness of the years that are passed.

If our natural things are to survive and to yield us their income, their value must constantly be made better known and public education about them must continue.

Knights of the Paper Trail

[Continued from page 88]

the pulp and paper industry. He shares his responsibilities with the forester, with whom he is truly a brother-in-arms. The forester must supply a continuous crop of the raw material which the paper industry has accepted as its own. To him has been assigned the rôle of a crusader—broadcasting the necessity for intelligent forest management, reforestation or afforestation, as the case may be—so that the specter of a forest famine may be averted or at least held in abeyance. The chemist is also on the firing line. His duty it is to use the industry's raw materials intelligently, to convert them into paper with the maximum of efficiency and the minimum of waste, and to insure to the manufacturer a product that will meet the requirements of a critical consumer.

Both the forester and the chemist have many a bitter struggle ahead of them. Their troubles and their limitations are obvious; but we must grant that they have made some little progress since the days when the scholarly Ts'ai-Lun made his first sheet of paper from the inner bark of a mulberry tree.

EDITOR'S NOTE.—*This is the second of a series of articles by Mr. Wise, dealing with the chemical transformation of the forest. The third article, telling the story of how artificial silk and other fiber products are made from the forest, will appear in the March number.*

Senators Stress Evils of Forest Depletion

[Continued from page 92]

"While 10,000,000 acres of woodland are cut over each year, but 1,000,000 acres of such land are added annually to the area in cultivation. This barely offsets the rate at which farm lands in the eastern states are being abandoned to unproductiveness or in some instances to forest growth.

"The idea long commonly held, that the bulk of the forest land in the more level portions of the country would speedily pass into agriculture is no longer tenable. Not only has it not been borne out by past experience, but there is small prospect that the future development of American agriculture will change the situation. On the contrary, present tendencies point toward the further curtailment of cultivation in most of the regions where natural conditions permit timber growth.

"Not only have forest fires vastly reduced the supply of timber in the United States by destroying merchantable stumpage, but the burning of slashings and cut-over lands has, more than any other cause, prevented an adequate regrowth of timber. The incessant burning of logged-off land has created the great barren areas which now form the most difficult part of the reforestation problem, because they can be restored to timber production only by artificial planting.

"The burdensome effect of annual property taxes is commonly cited by forest owners as a serious or insurmountable handicap to the growing of timber. A tax paid annually on growing forests which yield no income for 30 or 40 years is equivalent to the taxation of farm land with its growing crops thirty or forty times between seeding and harvest.

"While public forest ownership represents the most positive action yet taken by the American people for the perpetuation of their timber supply, it has, except in the Western States, lagged far behind the rate at which the forests of the country are suffering depletion. During the past eleven years, for example, all forms of public forest ownership have made a net gain of about 10,000,000 acres. But during the same period approximately 69,000,000 acres of old-growth timber have been cut off and much of the land bearing it has been denuded.

"The area of planted forests in the United States does not exceed one and a half million acres. Twelve and one-half per cent of this acreage has been planted by the Federal Government on National Forests, 6 per cent by state governments on their own holdings, less than 3 per cent by municipalities, and 75 per cent by farmers and owners of country estates. The amount of tree planting thus far done by lumber companies or other commercial land-owning interests is negligible.

"Approximately 36,000 acres are planted annually with forest trees, which is scarcely one-tenth of the timber planting now being done by Japan.

"The exhaustion of the virgin forests in the United States has already progressed so far as to seriously enhance the cost of lumber and to curtail its use. This condition must be expected to become more acute for many years. As the timber standing on American soil becomes more and more depleted, there is no foreign source to which the United States can turn with any certainty either of obtaining adequate supplies or of securing them at a reasonable cost.

"After all has been said, however, the fundamental need of the situation is to increase the volume of timber growth in the United States as rapidly as that can be accomplished. All other remedies and expedients combined will fall far short of supplying our national requirements.

"Aside from being the only practicable means of providing a future supply of timber, the growing of wood crops will bring other economic and social benefits by furnishing employment for otherwise idle land, re-establishing a rural population in many well-nigh deserted sections of the country, and creating permanent industries and taxable values. The use of a substantial part of our soil for growing timber is directly related to the future course of American agriculture in evolving a well-balanced program of land use. The importance of a national policy of reforestation is fully

[Continued on page 116]

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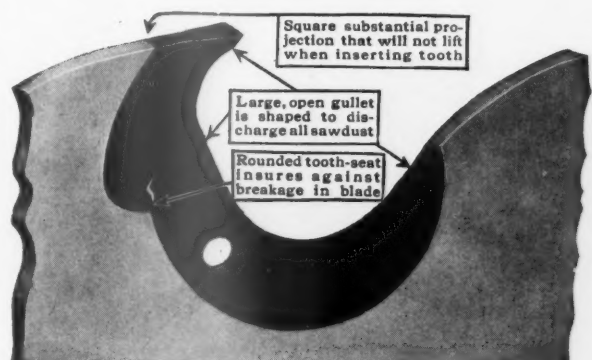
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Evils of Forest Depletion

[Continued from page 115]

as great from this standpoint as from that of supplying sufficient quantities of wood for future consumption."

The solution of these problems, the committee finds, lies only in increasing the rate at which timber is produced on lands suitable for timber production. The forest policy which it proposes would follow two main lines of attack:

(1) To extend public forest ownership in areas where special public interests or responsibilities are involved, like the protection of navigable rivers, and also where the natural difficulties, costs, and hazards attending reforestation render it impracticable or remote as a private undertaking.

(2) To remove the risks and handicaps from private timber-growing as far as practicable, in order to give the greatest possible incentive to commercial reforestation.

In furtherance of the first remedial proposal, the committee advocates the completion of the federal purchases of forest land contemplated by the Weeks Law, including an extension of these purchases to denuded areas in the regions where the principal bodies of such cut-over land occur.

With respect to a broadening of the forest-land purchasing policy of the Federal Government, the committee states: "In harmony with the constitutional precedents already established, such acquisitions should be re-

stricted to the watersheds of navigable streams; but the restoration of forest growth and the production of timber should be regarded as important objects of the policy."

As a further means of increasing public forests, the committee would authorize the Secretary of Agriculture to accept gifts of forest land, and it advocates general legislation to authorize the President to incorporate in National Forests unreserved public lands which are suitable for timber production or the protection of stream flow. It would also give the President power to create National Forests from military, naval, and other reservations, excluding national parks, national monuments, and Indian reservations, where the lands are chiefly valuable for forest growth. It endorses and recommends the creation of state and municipal forests, administered with a view to the continuous production of timber, together with other public benefits, like conserving game and affording opportunities for recreation.

Some of the measures advocated to encourage private reforestation include provisions for federal aid in the protection of forested and cut-over lands from fire. A federal study of forest taxation in co-operation with the states and other suitable agencies, with the hope of devising tax legislation adapted to given regions, co-operation between the Department of Agriculture and states in procuring, growing, and distributing forest planting material, and in

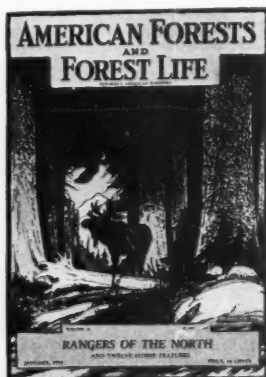
extending educational activities designed to encourage the growing of timber by farmers and other owners of forest land. The recommendations of the committee have been incorporated in Senate Bill 1182, introduced by Senator McNary. This bill is commented on editorially in this number of AMERICAN FORESTS AND FOREST LIFE, on page 99.

In conclusion, the committee expresses a favorable attitude toward liberal provisions by the Federal Government for the study of forest insects and tree diseases and research to promote the growth of timber and economy in its use. But it points out that appropriations providing for these subjects are now made currently in the regular supply bills. It therefore takes the position that no additional legislation for these activities is necessary. It takes the same position with respect to the Weeks Law, by recommending that the current appropriation under that act should be increased to not less than \$3,000,000 annually.

Two members of the committee, Senators Moses and Couzens, submitted an additional recommendation which apparently is not concurred in by other members of the committee. This recommendation is to the effect that existing laws pertaining to federal income taxes should be modified so as to permit all expenditures incurred for the protection, natural replacement or planting of forest growth to be deducted from the income upon which a tax is levied.

Membership in The American Forestry Association is open to any person interested in the perpetuation of our forests.

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AROUND THE STATES

NEW HAMPSHIRE'S "OLD MAN OF THE MOUNTAINS" FOR SALE

Lovers of the forests and beauty spots of the state are considerably concerned because the holdings of the Profile Hotel Company, including 6,000 acres of forest land, the Old Man of the Mountains, the Flume and Profile and Echo Lakes, are on the market. A number of timber operators are interested in the standing timber. Efforts are being made to determine the facts of the case and what steps may be possible either to forestall cutting where it would be objectionable or bring the forest lands within the jurisdiction of the state. The Society for Protection of New Hampshire Forests and the Forestry Commission have already held one meeting with the representatives of the hotel company. There is likely to be considerable agitation over this matter in New Hampshire and there is a strong possibility that funds may be available from some source or other to permit acquiring some of this property, at least, as a forest reservation.

The Forestry Department is devoting considerable time to an investigation of agricultural and forest conditions in the state in co-operation with the Commissioner of Agriculture and for the purpose of furnishing information to a commission which is undertaking the preparation of a report of rural conditions. Doctor Ralph D. Hetzel, President of the State University, is chairman of this commission. Part of the plan is to make an economic study of certain typical towns and communities within these towns to determine the reasons for successful or unsuccessful living conditions and the part which forests and woodlots have in making communities prosperous.

A FOREST POLICY RECOMMENDED FOR NEW YORK

At the hearing on Senator Rabenold's bill for the regulation of privately owned forests within the Adirondacks, held in Albany

last March, the Empire State Forest Products Association was requested to formulate definite recommendations for a forest policy for the State of New York. The Association's recommendations were submitted last month and include the following:

1. Adequate protection to prevent the destruction or injury of standing forests by fire throughout the state; the burden for such protection to be shared by the public and the owner of the land.

2. A general survey of the state should be made to determine what lands are best suited to forests. Steps should then be taken to acquire such lands and establish forests thereon.

3. At least nine technically trained foresters should be employed and assigned to districts, to organize fire protection and to assist forest and woodland owners in the proper management of their holdings.

4. The free-tree law has been limited in its operation by the size of the initial fund. In order to stimulate private reforestation, there should be liberal grants of free trees under practicable safeguards which are neither deterrent nor burdensome.

5. A plan of forest taxation should be perfected that will be equitable. For assessment purposes, forests should be treated as a crop; farm crops are assessed as such, and forest crops should not be assessed each year, but should be taxed on their product when cut.

6. The road to proper forest management in the Adirondacks is not by the diameter-limit method proposed in the Rabenold bill. The diameter-limit restriction will not of itself perpetuate the forest cover. The object sought in silviculture is a stand as good as, or better than, the stand previously occupying the area. To attain this object requires adequate regeneration and the maintenance of conditions favorable to the maturing of the young growth.

A NOTABLE GIFT TO FOREST EDUCATION IN THE WEST

Mrs. Alfred H. Anderson, widow of a pioneer lumberman of Seattle, has presented to the University of Washington, through President Henry Suzzallo, the sum of \$250,000 to be expended for a building, to be called "The Alfred H. Anderson Hall of the College of Forestry," in memory of her husband.

The building will be constructed at once, near the present Forest Products Laboratory, itself a model laboratory for training and research in forest technology, valued at nearly \$100,000.

In a letter to the board of regents, Mrs. Anderson said: "In view of Mr. Anderson's business activities and of his interest and faith in the future of our university, it seems a fitting tribute, and it gives me pleasure to advance his ideas by doing what I may to assist in the upbuilding of the lumber industry of Washington through the medium of his favorite state institution."

FORESTRY PRIZES

Annual prizes for the best papers on forestry written by the students of their forestry school are announced by the New York State College of Forestry at Syracuse University; the Forestry College at Cornell; the School of Forestry at the University of Washington at Seattle; the Forestry School of the University of California; Department of Forestry of the Pennsylvania State College, and the School of Forestry at the University of Michigan.

The annual prizes are given by Charles Lathrop Pack, president of the American Tree Association, and are for fifty dollars each. Mr. Pack stipulates that the prizes are to be awarded not for technical papers on forestry, but to students who write the best papers on forestry matters for public consumption, so that the coming foresters may be better able to popularize the important subject of forestry with the public.

TAX EXEMPTION FOR THESE INDIANA FORESTS

The Indiana Department of Conservation, Division of Forestry, during the past summer inspected 240 woodlands in 49 counties of the state for listing under the Forest Land Tax Reduction Act. Of the woodlands inspected, 144 owners agreed to list a total of 5,943 acres under the law.

Forest land listed under this act is appraised at \$1.00 an acre and taxed at the local rate. The main restriction on listed land is that it cannot be grazed at any time with any kind of stock. The Division of Forestry also offers suggestions as to proper management of the woods.

During the past two years 90 woodland owners have listed nearly 5,000 acres under the act. It is felt that once a woods is listed it is permanently dedicated to the growing of trees under reasonably good management, and a remarkable improvement in woodlands now listed has been noted.

Once a nucleus has been secured, many more woods-owners will be interested in classifying their land and a rapidly increasing area of forest land under some sort of management will be secured.

The State Department of Conservation is encouraging the planting up of thousands of acres of abandoned farm land in the southern Indiana hills. To this end many thousands of small trees are being grown in the nursery maintained by the State Division of Forestry on the Clark County State Forest at Henryville. These seedlings are sold for purposes of forest planting at cost of production.

MARYLAND'S STATE FORESTS POPULAR

District Forester F. W. Reed, of the U. S. Forest Service, and Mr. J. W. Barber, of West Newton, Massachusetts, who is representing an organization for promoting camping and outdoor recreation through

New England, recently visited the Patapsco State Forest, where they were shown around by State Forester Besley. This forest of 2,500 acres is near Baltimore and is used extensively as a recreation ground for city people. This last summer 300 different camping parties were there, each staying from a few days to twelve weeks. In addition, there were several thousand people who visited the forest for a day at a time.

The camping privilege has been enjoyed by thousands since the state forest was opened to the public, about six years ago, and there has been practically no abuse of the privilege. Camping on the four state forests in the mountain section of western Maryland was enjoyed by an increasing number of people this past season. Records kept on one of the state forests, near Oakland, showed more than 2,500 visitors.

REFORESTATION ON TAMA INDIAN RESERVATION IN IOWA

An interesting reforestation project is being carried on at the Tama Indian Reservation, located in Tama County, Iowa. Some years ago a portion of the 3,000-acre reservation was cleared of timber and used for the production of agricultural crops. Four or five years ago it became necessary to abandon cultivation on certain of these areas, due to the fact that the sandy soil and the moderate slopes were subject to erosion and were being rapidly cut by ravines and gullies. Some of the gullies were 10 feet deep.

The Forestry Section of the Iowa Experiment Station, in co-operation with the Indian Service, began the planting of five to ten acres each year until the areas were completed. Before successful planting could be attempted adjoining some of the worst gullies, it was necessary to construct temporary dams of posts and willow brush in order to prevent the washing out of the trees during heavy rainfall. After these temporary dams were constructed,



12 TO 15 FOOT GULLIES SHOWING TYPE OF ERODED LANDS ADJOINING THE TAMA RESERVATION

rows of rooted Carolina poplar cuttings about five feet in height were planted across these gullies. The trees were spaced about one foot apart, with about fifteen feet between the rows. The areas adjoining these gullies have been partially planted, using white pine, red pine, Scotch pine, black locust, walnut, and Carolina poplar. The first plantings were made three years ago and the results have been extremely satisfactory.

This planting in Tama County is interesting, since it illustrates one place in Iowa at least where there has been too much enthusiasm in clearing land for agricultural purposes which was not suited to agricultural crops.

OHIO WOMEN HELPING FORESTRY

The Ohio Federation of Women's Clubs is doing splendid work for forestry. The women are interested in this work and they are active. They have done much to secure the enactment of needed legislation and they are talking forestry all over Ohio. Mrs. W. W. Milar, of Akron, is chairwoman of the Conservation Committee of the Federation and she is giving much time and effort to this work among the local clubs of the State.

One thousand and eight hundred acres of land have recently been added to the Ross County State Forest by approval of the board of control. It is probable that this forest will ultimately contain between 6,500 and 8,000 acres. The areas recently approved for purchase now extend the forest to the Columbus and Portsmouth road, known as the Scioto Trail. This tract contains considerable merchantable timber, and it is expected that some sales will be made in the near future. The last fire passed through this land about 15 years ago.



CAMPING ON THE MARYLAND STATE FORESTS IS THOROUGHLY ENJOYED

ATTENTION, FORESTERS!

AMERICAN FORESTS AND FOREST LIFE will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters.

POSITIONS WANTED

WANTED POSITION by a forester, age 39—ex-captain A. E. F. Infantry—understands forest management, forest protection, practical lumbering and logging experience. Desire employment by estate or forest production company. If you are in need of a practical, hard-working man, address Box 5079, care of **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C. (11-2-24)

GRADUATE FORESTER, with A. B. and B. S. in Forestry, desires change of position. Especially experienced in reforestation work, and capable of taking charge of a large forest nursery. Also experienced in lecture work and a good talker in public. At present in a responsible State position. Best of references. Can make good at any forestry work. Address Box 5080, care of **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C. (11-2-24)

GRADUATE of New York State Ranger School, experienced in logging engineering in both Canada and the States, wants position. Address Box 5085, care of **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C. (12-2-24)

POSITION in federal, state, or private forestry work, located in either the New England or Atlantic States, wanted by a graduate of the Pennsylvania State College of Forestry 1921. References and details furnished upon request. Address Box 5090, care of **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C. (12-2-24)

GRADUATE FORESTER—B. S. in Forestry with several years' experience in forest engineering, forest pathology, and recreational forest engineering and development, desires a position with state or private interests engaged in forestry. Experience in state forest surveys for three years. Now employed by a sales agency, but desires to return to forestry profession. Best of references. Address Box 5095, care of **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C.

GRADUATE FORESTER, with degree Bachelor of Forestry. Has had twenty years' experience, having handled some of the largest lumber operations in northern Pennsylvania. Experienced in nursery work, reforestation, forest-fire adjustment, forest working plans, forest valuation, lumber inspection, timber cruising, manufacturing, utilization, marketing, and traffic service. Wish a position and an interest in company. Can give best of references. Available on short notice. Address Box 7000, **AMERICAN FORESTS AND FOREST LIFE**.

POSITION WANTED by a man 30 years old. Experienced in practical forestry both in the South and West. Ten years' experience with trees, plants and flowers. Farm superintendent of unusual ability. Excellent references. Address Box 7010, care **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C.

MAN OF 4½ years' experience in United States Forest Service and about four years in Ornamental Nursery and Landscape work; now employed by one of the most reliable landscape firms in the East; wants to return to forestry, either state or municipal. Will consider position on large private estate. Graduate of Yale Forest School. Information and references furnished. Address Box 7015, care **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C.

YOUNG MARRIED MAN, 26 years of age, 2 children, a farm superintendent, desires forestry work with a company or private estate anywhere, steady year-round work, developing and replanting on estates. Address Box 7025, care **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C.

EX-SERVICE MAN, from 11th Co., 20th Engineers, A. E. F., heretofore unable to work because of ill health, now wishes to return to woods work. Experienced woodsman, with good references. Address Box 7020, care **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C. (2-4-24)

PORCUPINE FALLS FIFTY FEET

A few mornings ago the towerman on duty at the Rarick Forest Fire Tower, in Tioga County, Pennsylvania, found a porcupine on the uppermost step of the tower, partaking of a few splinters of the upper platform of the tower cabin, and between bites enjoyed a view of the surrounding country at a height of 50 feet from the ground.

As the towerman had no club and was too thoughtful to turn his back on Mr. Porky, he decided to climb up on the railing of the narrow stairway and thus give the visitor plenty of room. When doing this the porcupine became alarmed, rolled up in a ball, and started down the steps. After hitting a few steps, he missed and fell 50 feet to the ground. He lay there for a few moments and then ambled off in the woods, apparently as healthy as ever.

The towerman feels sure that this was not the porcupine that ate part of a box of dynamite at the tower a short time ago!

A STATE FOREST FOR TEXAS

Mr. W. E. Bond, formerly Assistant State Forester in Vermont, has accepted a similar position with the Texas Forestry Department and has been assigned to develop the farm forestry work. The farmers of Texas own millions of acres of timberland, and while they are familiar with the growing and marketing of annual crops, they know very little concerning the management and marketing of their woodland products. The farm forester will assist farmers, through publications and demonstrations, to handle their farm woodland so as to obtain greater financial returns and at the same time render a public service in producing a greater amount of forest products. The Farm Forester will also co-operate with the farmers in the treeless agricultural portions of the state in stimulating interest in the planting of groves and wind-breaks.

By virtue of an appropriation of \$20,000 for the purchase of a State Forest, Texas will soon fall in line with most of the tim-

bered states as regards providing an area of forest land upon which the State Forestry Department may demonstrate practical forestry methods. The State Forest Purchasing Board comprises Dr. W. B. Bizzell, President of the Agricultural and Mechanical College; Honorable J. T. Robison, Commissioner of the Texas Land office, and E. O. Siecke, State Forester. Information as to suitable tracts is now being compiled and the purchase of the first unit will very likely be made some time next spring.

BAY STATE TREES FOR MUNICIPAL FOREST

During the past two years many cities and towns in Massachusetts have taken the initial step toward the development of municipal forests, and such cities and towns are supplied trees free of cost by the state from its main nurseries at Amherst, Barnstable, and Bridgewater.

The number of trees of all classes in these nurseries in the fall of 1923 was about 15,000,000. Of the above total, about 7,000,000 are transplants, while the remainder are in the one and two-year seedling stage. The estimated capacity of these nurseries in 1926 is placed at 20,000,000. In subsidiary nurseries the state is growing additional stock as follows:

Swann Forest.....	320,000 spruce,
Myles Standish Forest	700,000 Scotch, white,
	and Austrian pine.
Otter River.....	450,000 white, red,
	Austrian, and
	Scotch.
Savoy	450,000 Norway
	spruce.
October Mountain...	700,000 Norway
	spruce.
Erving	450,000 white pine,
	Norway spruce,
	and Scotch pine.

This makes a grand total of 18,000,000 trees now being produced by the state—an increase of more than 100 per cent over capacity of nurseries in 1921.

OVER 6,000,000 PEOPLE VISIT THE NATIONAL FORESTS

In 1917, the first year records of the number of people visiting the National Forests were compiled, slightly over 3,000,000 visitors were recorded. In 1922 this figure stood at over 6,000,000, thus showing a doubling in the number of visitors to the forests in six years. All indications point to a continued increase for the future.

"The use of the National Forests for recreation is in all respects deserving of encouragement," declares W. B. Greeley, Chief of the U. S. Forest Service. "It means for no small part of the country's population a valuable opportunity and privilege. Properly provided for, recreational use will add valuable elements to our national life without seriously impairing the

POSITION WANTED by man 70 years of age, in good health and active, single. Would assume the responsibility of the care of an estate, or game preserve, a friend of animals and birds. Lifelong practical experience in farming in So. E. Penna., 20 years' connection with a large nursery, expert knowledge of selecting and practical planting and care of pecan, English walnut, fruit, shade and ornamental trees, shrubbery, small fruits, flowers, vegetables, &c. Practical pruning a specialty, two winters spent in Florida pruning orange trees. Prefer location in East or South. Would consider an offer on a salary or share basis, if possible a personal interview requested. Satisfactory reference furnished. Address Box 7020, care **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C. (2-4-24)

YOUNG MAN, Single. Forestry student in two universities. Ranger in United States Forest Service, serving in Districts 6 and 3, desires to enter field of State, private or foreign forestry. Full particulars and references given on request. Address Box 7030, care **AMERICAN FORESTS AND FOREST LIFE**, Washington, D. C. (2-4-24)

Mention **AMERICAN FORESTS AND FOREST LIFE**—It Helps

capacity of the forests to create wealth or render other public services."

LOUISIANA STUDYING FOREST BIRDS

An interesting piece of research work was started in Louisiana during December—a study of the forest birds in relation to their value as destroyers of insects that are injuring tree life. The Great Southern Lumber Company of Bogalusa is co-operating with the Division of Forestry in this work.

The field-work will be carried on by E. S. Hopkins, a specialist in forest birds. Upon completion of Mr. Hopkins' work the Great Southern Lumber Company will build bird-houses, distributing them over its reforested area, catering to the bird life that is shown to be beneficial in eliminating injurious tree insects.

ANOTHER REDWOOD TRACT SAVED

San Mateo County recently purchased 310 acres of virgin redwood for \$70,000, which will be cleared of its tan-bark oak slashings and camp sites prepared for the convenience of the general public.

This park is one of the finest redwood groves in the state and is less than four hours' drive from San Francisco. An immediate purchase was necessary to save it, as all preparations for commencing logging had been made.

The State Forester and the "Save the Redwoods League" are co-operating in the cleaning up of a large area of slash on one of the groves in the Humboldt Redwood Park. The expense of this work is estimated at \$2,000, of which the "Save the Redwoods League" is contributing one-half. This organization spent a considerable amount last summer in the preparation of camping places in the Lane Memorial Grove, which is one of the many beautiful groves in the Humboldt Redwood Park.

MONTANA SCHOOLS BENEFIT BY FORESTS

The receipts for the fiscal year ending June 30 last from sales of timber by Montana State Forest Department, credited to the common school and other funds of the state, amounted to \$111,127.00. The department, in the execution of the State Brush Disposal law, secured the piling and burning of 17,890 acres of slash that had accumulated in years past.

The new Forestry School building is one among the number of new and modern buildings recently built at the Montana University, in Missoula. The new building is called Pinchot Hall. It is a reinforced concrete tapestry brick and terracotta structure, 60 x 130 feet, three stories high.

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Write for prices and particulars either direct to us or to our authorized representative for United States and Canada.

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GOLD MEDALS FOR BOY SCOUTS

One hundred gold medals were available for awarding to Boy Scouts in Pennsylvania during January for meritorious forest protection service performed during 1923. The same conditions as last year were in effect, and where possible the same key men acted as the judges. It is hoped to complete the awards by the latter part of February. After the gold medal awarding is finished, letters outlining the plan as to the awarding of bars will be sent to every Forest Guide Troop. These two matters are being kept separate, so that the Scouts will not become confused.

WISCONSIN ESTABLISHES FOREST FIRE DISTRICTS

The Conservation Commission has recently established the first two of six proposed special fire-protective districts in the state. The two organized areas embrace about 1,600,000 acres and the six proposed will include about 7,000,000 acres. The legislature authorized the creation of eight such special districts, to include not to exceed eight million acres, and in each case the regions affected were to be areas of special risk from fire and areas on which special opportunities existed for protecting young timber, irrespective of land ownership. The Commission proposes to concentrate its efforts in fire protection to these special areas, and to demonstrate in the course of a few years that fire protection is a practical thing over large areas.

Governor Blaine recently proposed the creation of a new state park in the northeastern Lake region of the state. The governor's action in this connection assures the perpetuation of a large park and forest area to the northeastern counties and to the state.

100,000,000 Board Feet National Forest Timber and Pulpwood For Sale

Location and Amount—All the merchantable dead timber standing or down and all the live timber marked or designated for cutting to a total estimated amount of 100,000,000 board feet of western hemlock, Sitka spruce, Alaska cedar and western red cedar timber, approximately 70 per cent western hemlock and 25 per cent Sitka spruce, from areas to be definitely designated on the ground by a Forest officer prior to cutting within two tracts in the vicinity of the town of Wrangell, on the Tongass National Forest, Alaska.

Stumpage Prices—Lowest rates considered, \$2.00 per M feet B. M. for Sitka spruce logs 24 inches and over in diameter and 16 feet and longer in length, and \$1.00 per M feet B. M. for Sitka spruce logs 12 inches and over and less than 24 inches in diameter, and \$1.50 per M feet B. M. for Alaska cedar and western red cedar logs, and \$0.50 per M feet B. M. for hemlock logs 12 inches and over in diameter, and \$0.60 per 100 cubic feet for Sitka spruce logs less than 12 inches in diameter and for Sitka spruce cordwood, and \$0.30 per 100 cubic feet for hemlock logs less than 12 inches in diameter and for hemlock cordwood, and \$0.015 per linear foot for timber, any species, to be used for piling or poles and over 95 feet in length, and \$0.01 per linear foot for timber, any species, to be used for piling or poles and 95 feet or less in length.

Deposit—With bid \$5,000, to be applied on the purchase price, refunded or retained in part as liquidated damages, according to the conditions of sale.

Final Date For Bids—Sealed bids will be received by the District Forester, Juneau, Alaska, up to and including March 14, 1924. The time may be extended 30 days upon request from parties having legitimate interest. The right to reject any and all bids is reserved.

Before bids are submitted full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the District Forester, Juneau, Alaska.

375,000,000 Feet National Forest Timber For Sale

LOCATION AND AMOUNT—All the merchantable dead timber standing or down and all the live timber designated for cutting on an area embracing about 5,900 acres in Twp. 20 and 21 S., Range 1 E., W. M., on the watershed of Layng Creek, known as the Herman Creek unit, within the Umpqua National Forest, Oregon, estimated to be 375,000,000 feet B. M., more or less, of Douglas fir, western hemlock, western red cedar and other species of timber, approximately 92 per cent Douglas fir.

STUMPAGE PRICES—Lowest rates considered. \$1.75 per M feet B. M. for the first 46,285,000 feet B. M. of Douglas fir, to be scaled, \$2.00 per M feet B. M. for the remainder of the Douglas fir, \$2.00 per M feet B. M. for the western red cedar, sugar pine and western white pine, and \$0.50 per M feet B. M. for western hemlock, incense cedar and other species. Rates to be readjusted December 1, 1928, and at three-year intervals thereafter.

DEPOSIT—\$10,000 must be deposited with each bid, to be applied on the purchase price, refunded, or retained in part as liquidated damages, according to conditions of sale.

FINAL DATE FOR BIDS—Sealed bids will be received by the District Forester, Portland, Oregon, up to and including May 5, 1924.

The right to reject any or all bids is reserved.

Before bids are submitted full information concerning the character of the timber, conditions of sale, deposits, and the submission of bids should be obtained from the District Forester, Portland, Oregon, or the Forest Supervisor, Roseburg, Oregon.

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KEEP CIGARETTES OUT OF THE WOODS

The following resolution was passed by the Pacific Logging Congress in November, 1923:

"For the past five years an average of 442,688 acres of forest land has been burned annually in the States of California, Oregon, Washington, Idaho, and Montana, and over 20 per cent of this annual loss is due to careless smoking in the woods, especially of tailor-made cigarettes; therefore,

"Resolved, That the Pacific Logging Congress go on record as strongly opposed to the use of all brands of tailor-made cigarettes in any woods operation in the Pacific Northwest, and that a copy of this resolution be sent to each of the leading cigarette and tobacco manufacturers of the United States."

MINE TIMBER IN PENNSYLVANIA COAL MINES

The Pennsylvania anthracite region, considered as a single mining district, is by far the largest user of mine timber of any mining district, either coal or metal, in the United States, and the bituminous districts of Pennsylvania rank second, says Harry E. Tuft, of the U. S. Bureau of Mines. The present annual consumption of mine timber by the coal-mining industry of Pennsylvania probably exceeds 100,000,000 cubic feet annually. In 1919 Pennsylvania produced, in round figures, 145,300,000 tons of bituminous coal, 85,200,000 tons of anthracite, and 5,400,000 tons of iron ores. If it be assumed that the bituminous coal mines required 0.33 cubic foot, anthracite mines 0.7, and iron mines 0.9 cubic foot per ton mined, the timber requirements were bituminous, 47,950,000; anthracite, 60,340,000; iron mines, 4,860,000, or a total of over 113,000,000 cubic feet.

The average cost of round mine timber in the anthracite region in 1905 was, according to the U. S. Forest Service, 6.6 cents per cubic foot and \$15 per 1,000 board feet for sawed timber. The present cost has advanced to 27.5 cents per cubic foot for round timber, delivered to the mine, of which cost 57.3 per cent represents freight charges.

FALL FOREST FIRES IN PENNSYLVANIA

A preliminary tabulation of forest fires covering the period from June 1 to November 23, 1923, shows that 594 fires occurred during the period known as the fall fire season. The 594 fires burned over approximately 34,000 acres and did damage estimated at \$78,000. These figures show that the fires averaged somewhat less than 60 acres. The area of state forest land burned during this period was 1,920 acres.

The Weiser Forest District, which includes the anthracite coal region, had 105

fires that burned over 10,229 acres. This was the largest number of fires reported for any forest district. The district having the next highest number of forest fires and the next largest area burned over was the Susquehannock Forest District, with 67 fires and a total of 9,000 acres burned over. The cost to the commonwealth for the extinction of fires was over \$7,000 in the Susquehannock District and \$4,750 in the Weiser District. More than half of the total acreage burned over in the state and slightly less than half of the total amount of money spent for the extinction of fires was spent in these two districts.

The greatest number of forest fires occurred during the months of June, July, and the first part of August. It was during this period that the drought conditions throughout the state were most severe. Since the middle of August and during the period which is generally known as the fall fire season there were comparatively few fires, and those that did occur were extinguished before they reached large size.

YES, WE HAVE NO RIVER TRAFFIC TODAY

Old-timers and some who are not so old remember when large packet-boats plied their regularly scheduled trips on the upper reaches of the Mississippi River, yet lived to see the unsuccessful attempt of a comparatively small boat of light draft to negotiate a trip to the old St. Paul terminal this last summer.

The public should be interested in knowing what has contributed to or brought about this changed condition in the water flow, and the answer is: Primarily, the destruction of the forests; secondarily, promiscuous drainage. In support of this contention we have in Minnesota an illustration that is illuminating. The upper reaches of the Rainy River, rising in and running through a comparatively heavy timbered district, with little artificial drainage, shows slight decrease from original levels, whereas the Mississippi, that carries about one-half of the normal drainage of Minnesota, has been reduced to its present deplorable condition through the destructive logging and ill-advised drainage carried on over its entire watershed. Can anything be more convincing?

The question now is, What is to be done about it? Will the public be content to stand idly by till our lakes, waterfalls, and streams become only a memory, or will it give heed to the exhortations of the trained foresters and conservationists, who know conditions and the gravity of the situation that the future portends?

To suffer a continuation of these proceedings will place the stamp of asininity on our business methods and earn for us now living the execrations of future generations.

Are we satisfied to take this chance?—
Jim Kent.



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White Shadows

[Continued from page 76]

snow. Again something frightened it, and this time it sought the deep shelter of a hemlock whose snow-freighted boughs trailed the ground. Finding no trace or sign of enemy, I concluded it may have been the approach of a hunting owl. A second flight coupled with the first made me believe the animal gifted with more acute hearing than it has been given credit. These were two examples worthy of notice. With such delicacy of hearing plus speed plus protective coloring, the white hare does well without fighting paws or teeth.

When the hare crept from under the hemlock, it ran toward the open clearing again to feed upon the fallen birch. It remained unmolested for some time, as the snow revealed much hopping back and forth, and the tree's branches bore plentiful nibbling, as though a dozen animals, instead of one, partook of a light lunch. Finally the trail led back down the clearing into the bottom lands. In the fall of the year some man had cleared ground to put in corn the next year and left the wood piled up in cord fashion. The trail ran to the woodpile and ended. I looked upon blood, bits of fur, and weasel tracks. The weasel had cached the body of the hare in the wood, and so cleverly was it

done I found no trace, even of fur rubbed on the wood.

In a mile tramp along the river I came upon two more trails—one with fox tracks in its wake, the other that of a dog and two huntsmen—and a half mile away, under a juniper, I found the head and four feet of a freshly killed cottontail. The head was warm. Somewhere, on a warm, sunlit slope, a fox dozed peacefully after a good breakfast.

Swinging up to a rolling ridge clothed thickly in birch, I came upon a number of tracks that finally joined into a well-beaten trail running the crest of the ridge. A little distance along I found another worn trail dipping to a grove of white pines, and in a clearing among the old trees I discovered the playground of the hares on moonlight nights. The snow was packed hard by the running and hopping of countless padded feet and signs literally covered the snow. No trails led any great distance from the clearing; so that all the hares must have returned to the ridge before scattering widely for the nightly wanderings. And, strange to write, after viewing tracks in such numbers, I failed to find a live hare or hear one breaking through the birch scrub. Surely they are white shadows!

DEFECTS IN AIRPLANE WOODS

Defects which reduce the strength of timber intended for airplane construction must be recognized in order that no weakened material finds its way into the make-up of the plane. All wood is subject to defects, of which the most serious is decay. Decay in its incipient stage is not readily recognized, but the first indication is usually a discoloration of the infected wood. Studies to determine the defects of wood by means of the various discolorations were made by the United States Department of

Agriculture and the results published in a recent bulletin.

The new bulletin, No. 1128, *Decays and Discolorations in Airplane Woods*, is illustrated with eight delicately colored plates, showing the numerous colorings in such minute detail as to assist the practical man in judging the strength of timber.

A copy of the bulletin may be secured from the United States Department of Agriculture, Washington, D. C., as long as the supply lasts.

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LUMBERMAN STRESSES CONSERVA- TION NEED

"I feel the time has come when the government should step in and prescribe the conditions under which logging should be carried forward to prevent needless waste which has characterized it in the past," Capt. Robert Dollar, President of Portland Dollar Lumber Co., is quoted as saying in a talk before the Portland (Oregon) Chamber of Commerce. "This waste must stop or the country will wake up some day in the near future without any timber. Reforestation must be carried forward. There is no time to lose."

THE LARGEST PECAN TREE IN THE WORLD

By JUDITH PORTER

One thousand years ago, when America was a vast wilderness of limitless prairies and craggy canyons, before the hordes of English, French, and Spanish invaders had touched its shores, there grew on the banks



THE SAN SABA PECAN

of a river in the southwest a slim, hardy pecan stripling. Today that same tree is the largest pecan tree in the world. Standing near the Colorado River, in San Saba County, it is 120 feet high and its circumference two feet above the ground is twenty-four feet. Ten feet above the ground it is six feet in diameter, while the height to the first limb is forty-one feet. The main branches have a spread of 100 feet.

This mammoth of the ages, called "Jumbo," has borne more than 1,400 pounds in one crop, according to its owner, Mr. J. C. Morris, of San Saba.

DECAY IN DOUGLAS FIR

Douglas fir is the most important timber tree in the Pacific Northwest and comprises nearly one-fourth of the merchantable timber of the United States. Because it is very susceptible to disease caused by four fungi, which cause great loss to owners of over-mature timber, the Department of Agriculture has made preliminary investigations to determine the extent of such damage and to formulate methods for more accurate estimation of the amount of defective timber. At present, estimates on Douglas fir stands are commonly very inexact, often resulting in heavy financial losses and costly litigation.

The results of the investigations so far made have been published in Department Bulletin 1163, "A Study of Decay in Douglas Fir in the Pacific Northwest."

Much information of value to owners of Douglas fir timber is included in this bulletin, a copy of which may be secured free of charge, as long as the supply lasts, from the United States Department of Agriculture, Washington, D. C.

FORESTRY PRACTICE IN SWEDEN

The Swedish people are thorough believers in scientific forestry, says E. J. Hanzlik, who recently returned from Sweden, where he spent the past year studying forestry, having held a Fellowship of the American-Scandinavian Foundation for the interchange of forestry students between the United States and the Scandinavian countries. They have learned that it pays them to handle their timberlands scientifically, Sweden cutting annually some 8½ billion feet, board measure. Their total productive forest area is but 60 million acres, but they supply large quantities of lumber to the British Isles, to European countries, and even to Australia.

Sweden has what American lumbermen would consider drastic laws. For example, cutting on private lands must be done in such a manner that future growth is not endangered and adequate protection be given these lands. The law also provides for supervision and enforcement of these laws through forest local protection boards, each board in charge of a technically trained forester and assistants. Their timber tax laws are also of interest, as Mr. Hanzlik brought out. The timber is taxed only once during its life, while the land is taxed annually, according to its forest-producing capacity. The Swedish timber or yield tax amounts to 3.3 per cent of the stumpage value of the timber when cut.

Education in forestry in Sweden is begun in the primary schools, so that the proper care of their forests is thoroughly fixed in the minds of the people.



BOOK REVIEWS

PULPWOOD AND WOOD PULP IN NORTH AMERICA. By R. S. Kellogg. McGraw-Hill (New York). Price, \$4.00.

This book describes the pulpwood industry; it tells what must be done to develop efficiently our supply of pulpwoods; how paper is made and what a manufacturing plant costs; what our present timber supply is and where it is and who owns it; describes the several kinds of pulpwood and their average cost; discusses practical forestry and the cost of forestry, as well as the essentials of a national forestry program; gives the present consumption of pulpwood and paper and tells how much and what kinds of wood have been used since paper was first made from wood in North America. Forestry is discussed from the practical angle of industrial needs. The author's wide information in this field is well known, and his book will do much to clarify opinion and discussion of the problems of the pulp and paper industry.

BIRDS—THEIR PHOTOGRAPHS AND HOME LIFE. By A. H. Cordier, M. D. Dorance (Philadelphia). Price, \$4.00.

In this book the writer turns a friendly searchlight on the characters and personalities of the birds, and the result is a very delightful compilation of intimate facts and interesting information—a valuable addition to the ornithological literature of the day. Photographic glimpses of the various species in their natural feeding and breeding haunts add greatly to the interest of the book, and the understanding interpretation of the notes and calls of the different birds is quite apparently the work of a real bird-lover.

LOGGING. By Ralph S. Bryant. Wiley (New York). Price, \$4.50.

Discussing the principles and general methods of operation in the United States, this is the second edition of a well-known book by a well-known author, which has been rebuilt to cover not only the needs of the student, but of all who desire a knowledge of the logging practices of this country. The recent developments in power skidding methods are described. Transportation, which is one of the most important phases of logging practice, is treated in greater detail than in the first volume. A chapter on the use of crawler tractors in logging work has also been added, because their rapid adaptation to the loggers' needs indicated the extensive adoption of this form of equipment. The bibliography has been brought up to date, and the logging glossary which appeared in the first edition

has been amplified and now includes all the more important terms used by the industry.

STANDARDIZED PLANT NAMES. American Joint Committee on Horticulture, 1923.

Formed in 1915 by committees of the American Association of Nurserymen and of the Ornamental Growers' Association, and gradually enlarging in scope and representative character, the stated purpose of the American Joint Committee on Horticultural Nomenclature was to "make buying easy" by bringing about, so far as practicable, the consistent use of a single standardized "scientific" name and a single standardized "common" name for every tree, shrub, and plant in American commerce. "Standardized Plant Names" has been prepared by a subcommittee consisting of Frederick Law Olmstead, Frederick V. Coville, and Harlan P. Kelsey. It is a catalogue of approved scientific and common names which the committee has declared standard for a period of not less than five years. While all botanists may not agree on some of the names standardized, the volume should be of great value and practical service in standardizing the horticultural terms in use in America.

REMEMBERED YESTERDAYS. By Robert Underwood Johnson. Little, Brown & Company (Boston). Price, \$5.00.

The memoirs of Robert Underwood Johnson, for 40 years an editor of *The Century Magazine* and in 1920-21 American ambassador to Italy, deal substantially with a life of activity and influence in public affairs. Intimately associated with such men as Roosevelt, Mark Twain, Howells, and Burroughs, a leader in many important movements, such as the fight for the conservation of our forests and the International Copyright campaign of 1890-91—which ended forever the national disgrace of literary piracy, the inside story of which is told here for the first time—this record of Mr. Johnson's long activity in the promotion of literature and art, and the moulding of public opinion, is one without which the modern library is incomplete today.

RANGER DISTRICT NUMBER FIVE. By Hunter Stephen Moles. Spencerian Press (Boston).

A collection of colorful tales of the old Southwest and of the powerful men who figured in its development, based on stories told the author by Arthur J. Wells, an ex-forest ranger whose acquaintance he made while he was in New Mexico. The picturesque life of the early days is drawn with realism, and the thread of the story, taken in most instances from real life, is full of human interest.

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NEW FOREST TREE BOOKS

"Forest Trees of South Carolina" and "Forest Trees of Kentucky" are the youngest members of the forest tree guide book family to appear. Each booklet contains descriptions of seventy species of forest trees, each illustrated with a cut. Several of the species described have not appeared in the sister books issued during 1923 by the States of Maryland, Delaware, Virginia, North Carolina, Tennessee, and the District of Columbia.

HOLDING WESTERN WHITE PINE FOR A SECOND CUT

Owing to the increasing interest on the part of operators in holding for a second cut young stands left after logging in the white-pine belt in Idaho, the Idaho School of Forestry has initiated a series of studies to determine how soon operators can return for a second cut, and what they may expect in the way of yields. The work was started the past summer, under the direction of Prof. C. Edward Behre, and will continue for several field seasons. However, data already in hand show these immature stands to have promising values.

GAME ON THE NATIONAL FORESTS

The herd of deer on the Kaibab Forest has often been erroneously described as the "largest herd of deer in the world." As a matter of fact, the largest herds of deer are found on the National Forests in California, which shelter approximately 185,000 head. Nearly 441,000 head of deer make their home on the National Forests, according to a rough estimate of big-game animals recently completed by Forestry officials of the United States Department of Agriculture.

The number of elk grazing on the National Forests is placed at 40,500, according to the big-game estimate. The Teton National Forest in Wyoming, bordering the Yellowstone National Park on the south, contains a larger number of elk than any other National Forest, although several other, notably the Olympic Forest in Washington, have herds ranging from 3,000 to 7,000 head.

On all National Forests hunting is allowed in the open season, except on areas established as Federal or state game refuges.

The antelope, or pronghorn, are still in a very unsatisfactory situation, Forestry officials say. The census shows a few antelope in many National Forests, but nowhere are they increasing. In northwestern Nevada and southeastern Oregon there is a

large antelope herd, estimated at from 1,500 to 3,000 head, grazing on public lands outside of forest areas. An effort is now being made to secure the creation of a game refuge which will cover the habitat of this herd, so that it may be protected and saved from extermination.

The number of moose on the National Forests has been increasing in recent years. The largest number is found on the Teton National Forest, in northern Wyoming, where moose are now becoming rather plentiful.

In addition to deer, elk, and antelope, the estimate lists 149 buffaloes on National Forests, 67 caribou, 10,500 mountain goats, and 12,300 mountain sheep.

The buffaloes are mainly on the Wichita National Forest and Game Preserve, in Oklahoma.

PROGRESS IN WHITE-PINE BLISTER RUST CONTROL

As a primary measure for the control of white-pine blister rust when it reaches Idaho, an attempt was made the past summer to eradicate all cultivated black currants in north Idaho. This work was done under the authority of Hon. Mark A. Means, State Commissioner of Agriculture, with Dr. Henry Schmitz, of the Idaho School of Forestry, in immediate charge. In order to make certain that no cultivated black currants were missed, the entire area will be checked during the coming field season. White-pine blister rust is spreading very rapidly from British Columbia and Washington toward the white-pine region of Idaho and is now within 55 miles of the state line.

NOT LIKE OLD DAYS IN CONNECTICUT

"In the old days," says State Forester A. F. Hawes, "Connecticut forests supplied the lumber used in the state, and building was cheap. Today most of our lumber comes from the South and the Pacific coast. The people of Connecticut are paying an annual freight bill of \$3,000,000 on lumber used in building and manufacturing. The lack of native lumber also permits excessive prices. For example, lumber which sells at retail for \$60 in Seattle sells for \$100 in New England, although the freight cost is only \$18.

"Connecticut should raise most of the lumber used by its people. If all of our idle land were put to work, we could do this. We need large state forests on which to raise big timber, and better handling of private forests for the production of box boards, railroad ties, and poles.

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